

**AMERICAN**

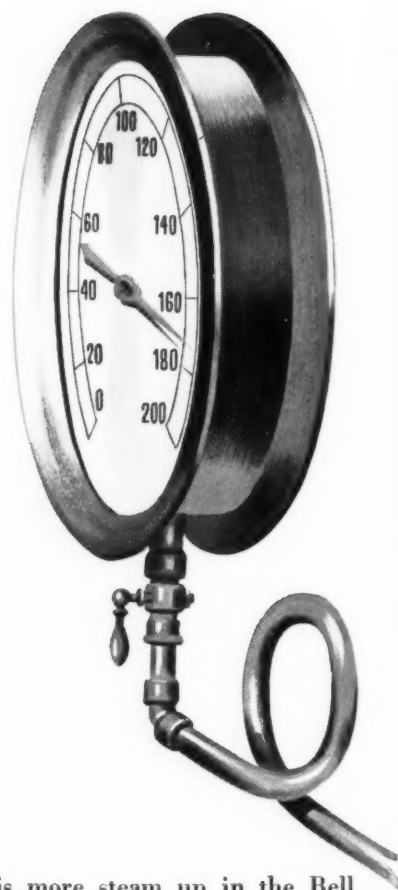
**FORESTS**



**MAY 1942**

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## American Forests

Editor  
OVID BUTLER

Associate Editors  
LILIAN CROMELIN  
ERLE KAUFFMAN

Published monthly by

### THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street  
Washington, D. C.

The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of two magazines—AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational programs in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. All its resources and income are devoted to the advancement of conservation in the interests of public welfare. All citizens are welcomed to membership.

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## Who's Who

Among the Authors in this Issue

**ERLE KAUFFMAN** (*Wildlife Is Taking It*), attached to the headquarters office of The American Forestry Association in Washington, D. C., is an associate editor of this magazine.



Henry B. Steer

**HENRY B. STEER** (*Paper and the War*), native New Yorker, is a forest economist at the Washington office of the U. S. Forest Service. Mr. Steer returns as a contributor to these pages for the first time since June, 1929—"Going Up to See in Trees." He has been with the Forest Service since 1930, and for fifteen years previous to that date was with the Indian Forest Service, of the Department of the Interior.

**GRACE V. SHARRITT** (*My Maple*) writes from Detroit, where her column for women—"Outside the Kitchen Door"—is a regular feature in the *Free Press*. She admits to being a "combination woman—homemaker and breadwinner"—supporting herself and small daughter for more than five years with her facile pen. She writes with feeling of the lovely things of the outdoors—woods, fields, birds and wildflowers,—and her understanding is written into her work—now appearing in many current national magazines.



Grace V. Sharritt

**V. WOLFGANG VON HAGEN** (*Balsa—the Buoyant*), American-born, educated abroad, is a writer and explorer and has

lectured in many countries. His articles have appeared in many internationally famous magazines, and he has written several books, including "Off With Their Heads," "Jungle in the Clouds" and "Ecuador the Unknown." In the latter, which is the most complete book on Ecuador to appear since 1867, he also writes of balsa—the lightest wood in the world, which he discusses here.

**LOYD W. ROWLAND** and **ALLIE BELLE ALLEN** (*Superstition in Fire Prevention*) are well-known psychologists. Miss Allen, born in Arkansas, spent her youth in the Indian Territory and the foothills of the Ozarks. Her hobby and delight is the collection of fossils and Indian relics. She took her master's degree in psychology at the University of Tulsa. Dr. Rowland—with whom Miss Allen collaborated—was born in Fort Worth and received his higher education at Baylor and the Universities of Texas and Chicago. For seven years he taught psychology at the University of Tulsa and he is now chairman of that department at Baylor University at Waco, Texas.



Allie Belle Allen



Ernest Walker

**ERNEST E. WALKER** (*Camouflage Planning—Its Need and Prospects*) is chief landscape architect of the U. S. Forest Service, and writes with authority on this highly important and timely topic of camouflage. Before joining the Service, Mr. Walker was for many years a practicing landscape architect in Chicago. He took his master's degree from Harvard School of Landscape Architecture, later studying town planning and landscape design at the University of Liverpool, in England, under the instruction of the late Thomas H. Maunson, world authority on landscape design.

THE COVER—"Dogwood in Early May"—Photograph by Devereux Butcher.

AMERICAN FORESTS



## WE NEED THE TONIC OF THE WILDERNESS



Trail Riders in the Majestic Maroon Bells-Snowmass Wilderness of Colorado

In the belief that an opportunity for many to vacation briefly this summer in the unspoiled wilderness is in the interest of national health and national morale, The American Forestry Association is organizing seven expeditions of Trail Riders of the Wilderness. These trips are open to anyone who loves the wilderness, whether a member of the Association or not.

June 16 to June 27—Great Smoky Mountains, North Carolina. \$128 from Asheville  
July 8 to July 18—Bob Marshall Wilderness, Montana. \$130 from Missoula  
July 20 to July 31—Sawtooth Wilderness, Idaho. \$142 from Sun Valley  
July 29 to August 7—San Juan Wilderness, Colorado. \$138 from Durango  
July 29 to August 8—Gila Wilderness, New Mexico. \$115 from Silver City  
August 5 to August 15—Snowmass Wilderness, Colorado. \$133 from Glenwood Springs  
August 24 to September 3—Sequoia Wilderness, California. \$140 from Mineral King

All expeditions are carefully organized with experienced guides, packers, wranglers and cooks. A physician is with each party; so is a representative of The American Forestry Association. Nearly six hundred men and women have participated in forty-three expeditions since 1933. So make this your year to ride with the Trail Riders of the Wilderness—rebuild mentally and physically for the important days ahead. Write for reservations and detailed information.

### THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street, N. W.

Washington, D. C.



April 13, 1942

TO MEMBERS OF THE HOUSE OF CONGRESS:

Within a few days you, as a representative of the American people, will be called upon to decide a question that may be of momentous importance to our uninterrupted prosecution of the war.

**This question is whether or not the Congress shall provide necessary emergency funds with which to guard war movements, war industries and war resources against sabotage by forest fires.**

The question will come to issue in the pending conference of the House and Senate on H. R. 6868, making additional appropriations for the national defense. In passing the bill, the Senate increased the House item for emergency forest fire protection from \$2,324,800 to \$19,665,000—the sum recommended by federal and state protective agencies after a national survey of forest areas deemed critical from the standpoint of forest fire hazards to war operations.

**In the interests of guarding our war effort, we earnestly plead your support of the Senate figure.**

In justification of this plea and that you may not minimize the danger of forest fires this summer, we wish to call to your mind the destructive possibilities of forest fire as demonstrated by a few fires of recent U. S. history.

**August, 1910—Idaho and Montana.** Aided by favorable conditions of drought and wind, forest fires paralyzed these states for almost two weeks, causing people to flee from their jobs and homes, and taking upwards of one hundred lives. Towns were blackened, transportation and normal business disrupted and a pall of smoke spread eastward beyond the prairies and westward to three hundred miles out over the Pacific Ocean, obstructing nautical observations and coastwise sea traffic. Property and timber losses exceeded \$100,000,000.

**October, 1918—Minnesota.** On August 12th a forest fire swept over 1,500 square miles of Minnesota, taking the lives of over five hundred citizens and destroying twenty-five towns and villages in whole or in part, including Cloquet, a city of 10,000 population. Rail-

road, telephone and telegraph lines were broken. The State Guard and Red Cross had to be called to action and for days normal civilian activities were stopped.

**September, 1932—California.** Beginning September 7th and lasting for twelve days, a forest fire in Ventura County, Southern California—a region in which war industries and movements are today heavily concentrated—swept over 250,000 acres and entailed the drafting of farm and civilian labor for miles around. Five major watersheds vital to the water supply of eight cities and towns were burned and power, telephone and air services were dislocated. Destructive floods followed the devastation of the mountain areas burned.

**August, 1933—Oregon.** Sending billows of smoke to an elevation of 40,000 feet over coastal harbors and inland towns, a forest fire in Tillamook County, Oregon, for eleven days disrupted civilian and industrial life in a large section of the Pacific Northwest. So dense was the smoke that electric lights in coast towns had to be burned during the day. Sea, air and railroad traffic was stopped or impeded and thousands of people from surrounding country had to leave their jobs to fight the fire. Losses exceeded \$350,000,000, including ten billion feet of the nation's finest timber—timber of a character now being called for in large quantities to meet war needs.

These and many other great fires are easily documented by front page headlines in newspapers of their time. They rank as major catastrophes of American life. They occurred under normal peacetime conditions, caused by acts of civilian carelessness or vagrant lightning.

**Now at war, our nation faces hazards many times greater—the planned setting of forest fires by enemies whose devilish schemes of confusing, terrorizing and sabotaging adversaries have no limits. They have used forest fires as a weapon against England and Russia. They will use them here.**

We need only to picture one or more of the great forest fires of the past occurring this summer in critical war areas to measure the reality of the danger and its possible cost to our success at arms.

Congress and Congress only can provide the emergency funds which experience and national awareness dictate as necessary to deal with the danger. The Senate has approved preparedness funds in the estimated amount called for. Upon the House now rests the responsibility of making that preparedness final and this plea, therefore, is to you as a member of that assembly to support the action of the Senate.

Very sincerely yours,

  
Executive Secretary

# WILDLIFE IS TAKING IT

By ERLE KAUFFMAN



U. S. Army Signal Corps

Wildlife is but slightly and temporarily disturbed, observers report, when tanks grind, skid and slash through forests and underbrush

WHEN for military purposes the Army in 1941 took over a million acres of national wildlife refuge land, there was considerable public excitement, especially among wildlife enthusiasts. Citizens, growing keenly aware of the methods and weapons of modern warfare, knew that the immediate job in America was not alone to produce these weapons but to become deadly efficient in their application.

This called for large tracts of isolated land—land for troop maneuvers, for encampments, for ordnance depots. Somewhere heavy tanks had to grind, skid and slash through forests and underbrush. Ranges were needed for artillery, for anti-aircraft guns. And

thundering airplanes required space to unload bombs or to rip at ground targets with machine guns.

But why, citizens asked, send these roaring, destructive machines of war into areas dedicated to the preservation of wildlife?

In continental United States there are less than 10,000,000 acres operated as national wildlife refuges by the Fish and Wildlife Service of the Department of the Interior. To these refuges come waterfowl and upland game birds, deer, bighorn sheep and antelope, practically all species of American bird and animal life. Here is sanctuary, a place to rest, to feed, to rear their young. Largely because of these areas wild-



# FIRST-HAND OBSERVATIONS OF WHAT IS HAPPENING TO BIRDS AND ANIMALS IN WILDLIFE REFUGES WHERE



Aircraft put Canada geese on the alert

## AMERICA'S MECHANIZED ARMIES ARE TRAINING

life numbers are increasing. In and around them species near extinction are fighting to come back. Indeed, to a great many people these national sanctuaries represent one of the nation's foremost conservation achievements.

Then why lay waste a million acres of such beneficial land? Why destroy feed and cover, scatter coveys and drive out herds, kill and mutilate when areas elsewhere on this vast continent of mountains, plains and deserts are eminently suited to the grim business of preparing for war? These are questions many citizens interested in the future of wildlife as well as the winning of the war are asking.

And they are pertinent questions. If it is a fact that refuges are being needlessly devastated by military action, that wildlife is being unnecessarily destroyed, clear-thinking Americans have eloquent reason not only to question, but vigorously to press for remedial action.

But—is it a fact? Not according to the observations of the refuge managers and wardens—men close to the scene. Wildlife lands used for military purposes, they report, are not being devastated and wildlife is not being destroyed, driven out, or seriously disturbed, except in isolated instances. And there is expert opinion that military use in some areas is affording a measure of wildlife protection due to exclusion of civilian activities.

Of a hundred such observations reported to the Fish and Wildlife Service, nearly sixty failed to note material change in wildlife or refuge conditions because of military action. Only slight damage or disturbance was reported by the remaining forty.

Before reviewing some of these reports it may be well to answer the question of why national wildlife refuges are being used for military purposes. It might also be well to bring out that national forest

lands in excess of a million acres have likewise been turned over to the War Department, along with much smaller areas under the jurisdiction of other government land-managing agencies.

Considering the gigantic scale of war preparations in 1941, the need for large tracts of isolated land by the Army, and to a lesser degree by the Navy, is crystal clear. The Army, of course, did not possess these areas, and to avoid a costly and time-consuming program of acquisition a cooperative system of governmental land transfer was devised. These transfers, for the most part, are in force only for the duration, the lands to be returned to the original administering agencies when no longer needed for the prosecution of the war.

The areas were selected by the Army, in cooperation with the federal administrative agencies involved, primarily because of their nearness or accessibility to military bases and airfields. In the case of wildlife refuges, the lands chosen were largely from the public domain in western states, from areas set aside by executive order for the protection of big game and used jointly by wildlife and livestock. In the South lesser submarginal areas, first purchased under the resettlement program and then turned over to the Fish and Wildlife Service, were selected. In no instance—and this is important—have highly developed wildlife areas been turned over to the war machines.

For reasons that are obvious the extent of military action in and around the wildlife transfer areas is strictly Army business. It may be said, however, that the more important transfers have been from the Cabeza Prieta game range in Arizona, the Desert Game range in Nevada, the Salt Plains Refuge in Oklahoma, the Wheeler Refuge in Alabama, and the Necedah Refuge in Wisconsin. The first two are primarily for bighorn sheep, the last three for waterfowl, upland game, and other wildlife.

How these and other areas have been affected by military operations is clearly written in recent reports from observers of the Fish and Wildlife Service. Here is a typical report on large-scale troop maneuvers in the Carolina Sandhills Refuge of South Carolina, by William F. Hopkins, refuge manager:

"During November, mechanized forces, including tanks, armored cars and trucks, were present on the refuge in large numbers, together with possibly 100,000 soldiers. Occasionally, there were low flying

into the swamps. The usual signs of bobcats and raccoons were seen.

"Fifteen forest fires were started by the Army during its five days on the refuge. These resulted from an estimated 500 warming fires used by the troops, most of which were left secure.

"Many bridges were broken and there was heavy damage to truck trails. All damages, however, will be repaired by the Army.

"It is expected that the breaking down of scrub



U. S. Army Signal Corps

On artillery ranges, deer scatter when firing begins—but return. They learn, observers say, that the big guns will not harm them

planes. Most of the truck trails received heavy use, and there was constant noise from the motorized equipment. However, little gunfire was heard.

"As may be expected, coveys of quail were scattered, but only temporarily. They soon reassembled. No harmful effect was noticed on wood-ducks or doves. Prior to and during the early stages of the maneuvers, deer tracks were often seen on the truck trails and food strips. None have been observed since then, however, and it is too early to determine whether deer actually left the refuge or have been frightened

oak by tanks and the disturbance of the soil by wheels of trucks, as well as the burying of fires and garbage, will increase native game foods."

Many wildlifera have voiced alarm over the possible effect on bird and animal concentrations of heavy air-training activities, mainly bombing, air-to-ground gunnery, and practice landings in or near the refuges. Here is a sample of what the observers report on this:

From James Silver, regional director of the Fish and Wildlife Service at Atlanta, Georgia: "In spite of constant patrol by huge (*Continuing on page 237*)



Official Photographs, U. S. Army Air Corps

The noise of many planes flying over refuges sometimes frightens but seldom panics wildlife. Ducks practically ignore them



Since few live bombs are used, damage to refuge areas and to wildlife by bombing practice appears to be negative, report the observers



U. S. Army Signal Corps

# PAPER AND THE WAR

By HENRY B. STEER

## The Why of the National Campaign to Salvage Waste Paper

Thousands of tons of salvaged paper will appear again in the form of shell cases

PAPER, in many different forms and for a multitude of various purposes, is a commodity which we as a nation have come to take for granted. Because it has been relatively cheap and plentiful, we use it freely—if not extravagantly and wastefully. Before Hitler, Hirohito and Mussolini ran berserk, paper in the United States was constantly being adapted to new and useful purposes. Our national consumption rose like a fast climbing fighter plane. But the greater part of our paper was used only once, and was then destroyed.

This, however, the war has changed. Civilian consumption of paper is faced with sharp retrenchment during 1942 if the full military needs of ourselves and of our allies are to be met, unless additional supplies are forthcoming.

The fuller utilization of waste paper is the most promising supplemental source of supply. By far the greater proportion of the paper and paper products annually consumed in the United States can be salvaged and used again—and again. We can, if we employ economy and thrift, "have our cake and eat it" as far as the majority of paper products are concerned. The salvaging of paper once used, but which can be used again, is a distinctly worthwhile

activity to which practically every person can contribute in a substantial way. This is the real reason behind the collections of waste paper being made through schools and other organizations.

Before discussing our present and potential needs for paper and allied products and how they can be met in the light of chaotic world conditions, it might be interesting to outline briefly the various processes for making different kinds of paper, and how our ever-growing requirements have been met.

No one knows exactly when paper was first used, but it is generally conceded that the art of making paper was known in China before Christ was born. The Chinese are said to have used silk fiber as the raw material for their paper. Later linen and cotton and other vegetable fibers were used. Although wood had often been considered a possible source of raw material for the manufacture of paper, it was not until 1840 that the forerunner of our present mechanical or ground wood pulping process was advanced by a German—Keller by name. Many fibrous materials have at one time and another been considered as potential sources of paper pulp, but the only ones of commercial importance are wood, hemp, linen, jute, cotton, and straw, and of these wood is by

AMERICAN FORESTS



far the most important.

Paper pulp consists of fibrous material obtained from wood and other sources. In the early days, linen or other rags or vegetable fibers were macerated by beating with a wooden hammer in a stone mortar and the sheet was formed by straining the resultant mixture through a coarsely woven fabric. The first mechanical beater was invented and used in Holland, about 1750. By 1854 adaptations of the Keller process made it possible to use wood commercially for paper pulp. Wood pulp is now produced by five basic processes—the original mechanical process, three chemical processes — soda

## DEFEAT HITLERISM

Save Every Scrap of Paper Now

- 1 NEWSPAPER would make three 26-pounder shell cups.
- 1 POPULAR MAGAZINE would make interior components of two mines.
- 6 OLD BOOKS would make one mortar shell carrier.
- 1 SOAP POWDER CANISTER would make four aero engine gas-kets.
- 5 MEDIUM SIZED CARTONS would make one shell fuse assembly.
- 60 LARGE CIGARETTE CARTONS would make one outer shell container.
- 20 BREAKFAST CEREAL CARTONS would make one case for 3-pounder shells.
- 6 OLD BILLS would make one washer for a shell.
- 4 ASSORTED FOOD CARTONS would make 1 box for aero-cannon shells.
- 1 OLD ENVELOPE would make one cartridge wad.
- 12 OLD LETTERS would make one box for rifle cartridges.

—From the "British and Colonial Printer and Stationer" of January 22, 1942.

introduced in 1852, sulphite in 1867, and sulphate in 1883—and finally a combination of the chemical and mechanical processes. Pulps resulting from these processes are designated as mechanical, sulphite, sulphate, soda, and semi-chemical.

Mechanical pulp, or groundwood, is produced principally from spruce, hemlock, and the firs. It is cheaper to produce than the other varieties and

is used in the cheaper forms of papers such as newsprint, hanging, building, and the low grade tissue papers, and in paper board. Mechanical pulp is made by grinding the wood to pulp on a stone, enough water being used to control the temperature. Very little,



Wide World Photo

"Nothing so old as yesterday's news"—yet these old papers will help win the war as they appear again and again in hundreds of paper products necessary to supply our military needs

if any, chemical action takes place. Groundwood pulp was first produced in the United States in Curtisville, Massachusetts, in 1867. It is a major factor in our present wood-pulp production.

Sulphite pulp is also produced principally from spruce, hemlock, and the firs. Alone or mixed with groundwood, repulped waste paper, or rag pulp, it is the basis of many kinds of paper and paper board, including printing, tissue, and wrapping papers. Bleached sulphite is used in the better grades of printing and other papers, and highly purified grades are used in the production of rayon and high quality cel-

pulp is usually mixed with sulphite, and is principally used in the manufacture of certain high grades of printing papers.

Sulphate, or kraft pulp, as it is commonly called, is produced principally from conifers—primarily from the pitchy pines. This process is a modification of the soda method, in which the wood chips are cooked in a solution of caustic soda and sodium sulphide. Most sulphate pulp is used in the production of kraft wrapping paper, bags, container board, and similar products including various kinds of specialty papers. For some types of board—and here

is the principal use of waste paper—sulphate pulp is mixed with repulped waste paper or other fibrous stock. For wrapping and bag paper, however, where strength is essential, sulphate pulp is generally used alone, or unmixed. The sulphate process was not introduced into America until 1907, but its use has expanded at a tremendous rate until in 1939 the amount of sulphate pulp produced in the United States was nearly as great as the combined total of the mechanical and other chemical processes.

Semichemical pulp is produced principally from hardwood or broad-leaved species. It is produced in small quantities only, and practically all the domestic output is used in the production of corrugated board.

The Bureau of the Census reports that 194 pulp mills in the United States produced in 1939 more than seven million short tons of pulp, of which ninety-eight per cent was made from wood. Of this wood pulp production twenty per cent was produced by the mechanical process, twenty-seven per cent by the sulphite, forty-two per cent by the sulphate and nine per cent by the soda and semi-chemical process and from screenings. Of the total pulp production, fibrous materials other than wood such as cotton, sugar-cane, corn stalks,

linen rags, jute and hemp, yielded only two per cent.

To produce our 1939 requirements of wood pulp, the Census report shows that nearly eleven million cords of pulpwood were consumed. It has been estimated that in 1941 fifteen million cords were required. Stacked four feet high and four feet wide, our 1941 consumption of pulpwood would make a continuous pile 22,500 miles long—or enough to stretch across the continent from New York to San Francisco over seven times. If placed in one square pile as high as the Washington Monument (555 feet) the square would be 1,850 feet long on each side.



U. S. Army Signal Corps

Here paper cartons are being assembled to hold field rations. Each case contains one day's provisions for eight men

lulose compounds, including those especially valuable for the manufacture of explosives. Sulphite is the most important of the three chemical processes. The wood is first barked, then chipped, and placed in digesters where it is subjected to the chemical action of a cooking liquor consisting of a solution of sulphur dioxide in an aqueous solution of calcium or magnesium bisulphite or a mixture of the two.

Soda pulp is produced largely from broad leaved trees, especially aspen, cottonwood, beech, birch, and maple. The wood chips are pulped in this process by cooking them in a caustic-soda solution. Soda

The pulp and paper industry, it will be seen, is no pygmy. More than 900,000 workers normally are employed in paper processing operations—more than in the automobile industry. In addition to tremendous quantities of wood and other fibrous materials, it uses annually over 150,000 tons of iron, 250,000 tons of steel, 25,000 tons of copper, 500,000 tons of clay and lime, 350,000 tons of sulphur, and 600,000 tons of salt cake.

Consumption of paper and paper board in the United States has risen steadily since Colonial days until the annual rate is now about 250 pounds per person. Although the larger part of this paper, with the exception of newsprint, is manufactured in the United States, we have normally drawn heavily upon Canadian and Scandinavian sources for wood pulp and upon Canada for pulpwood and newsprint paper. In the years just previous to the overrunning of Norway by Hitler's hordes, this country imported about fifty per cent of our paper requirements—ten per cent in the form of pulpwood, twenty per cent in the form of wood pulp, and twenty per cent in the form of paper.

The shutting off of pulp supplies from Scandinavia and other European sources, coupled with greatly increased requirements in this country, both civilian and in connection with the defense-war effort, has resulted in a tremendous expansion of our domestic pulp and paper industry. Although domestic wood pulp production has risen forty-two per cent in two years, it is not believed that the quantity now available is sufficient for the current year's requirements.

Six million out of the seventeen or eighteen million tons of paper produced are serving war purposes directly or indirectly. Another six million tons are serving essential civilian needs. War requirements, direct or indirect, are claiming fifty-two per cent of the total production of container board, forty-three per cent of paper board, eighty per cent of building paper, and twenty per cent of kraft wrapping paper. Wood pulp is rapidly becoming the primary source of cellulose for munitions—one of the many uses for paper materials in the Victory program. Hundreds of thousands of tons of high grade sulphite pulp are being used for this purpose.

This means that much less sulphite pulp is available for sulphite papers. Additional hundreds of thousands of tons of pulp are going into paper board for shell cases. At least 200,000 tons of kraft pulp

have been diverted from ordinary uses to the manufacture of heavy duty paper to serve purposes hitherto filled by burlap which came from across the Pacific. The United States Government Printing Office alone is using more than 100,000 tons of paper a year, of which almost three-fourths is directly related to our war effort.

Furthermore, we must help our allies, and it is expected that about half a million tons of pulp will be exported this year under the lend-lease act. We need paper to serve uses previously served by metals now become scarce—new papers with protective cov-



U. S. Army Signal Corps

Cases and cases of shoes for the feet of marching men. Checking out shipments at the Chicago Depot of the Quartermaster Corps

erings to replace metal, tin, plastics, and other critical items previously used by thousands of industries which must now find acceptable substitutes or go out of business. Paper can serve many of these essential uses.

The unoptimistic approach to the situation would point out that although pulp production is at the highest level yet attained in this country, it will be inadequate to fill our 1942 needs because of such things as the shortage of woods labor both here and in Canada, the rubber shortage which will materially affect the delivery (Continuing on page 236)

# My Maple

By

GRACE V. SHARRITT

FOR FIVE YEARS I have lived my life at the side of a tree, content just to call it "Maple". You know, the way you speak familiarly or affectionately of an interesting or beloved character of your acquaintance as "Butch", or "Sal", or "Hammy", not caring a hoot about their antecedents, just for what they themselves are and how their present lives touch yours.

But I guess it's different with a tree. To call a tree "Friend", you should really know the story of its life, from the earliest beginnings. You should be able to name its genus, specie and variety glibly and brightly, rolling the difficult, unpronounceable and indistinguishable Latin vowels and consonants from your tongue like a carnival barker telling of the scintillating qualities of the Tattooed Lady. You must never degenerate into slipshod classification of a specie as I had done, lumping all your love and desires into one careless term, "Maple". That is, you should not speak thusly if you expect the scientific intelligentsia to believe claims of your close association with such a tree.

It was not until a recent day when someone asked, "What species is your maple?" did I realize, much to my chagrin, that I could not make immediate answer. It had been just "Maple" to me. An intimate part of my life, like going to bed at night, or arising in the morning, my tree was a habit, not an analytic study.

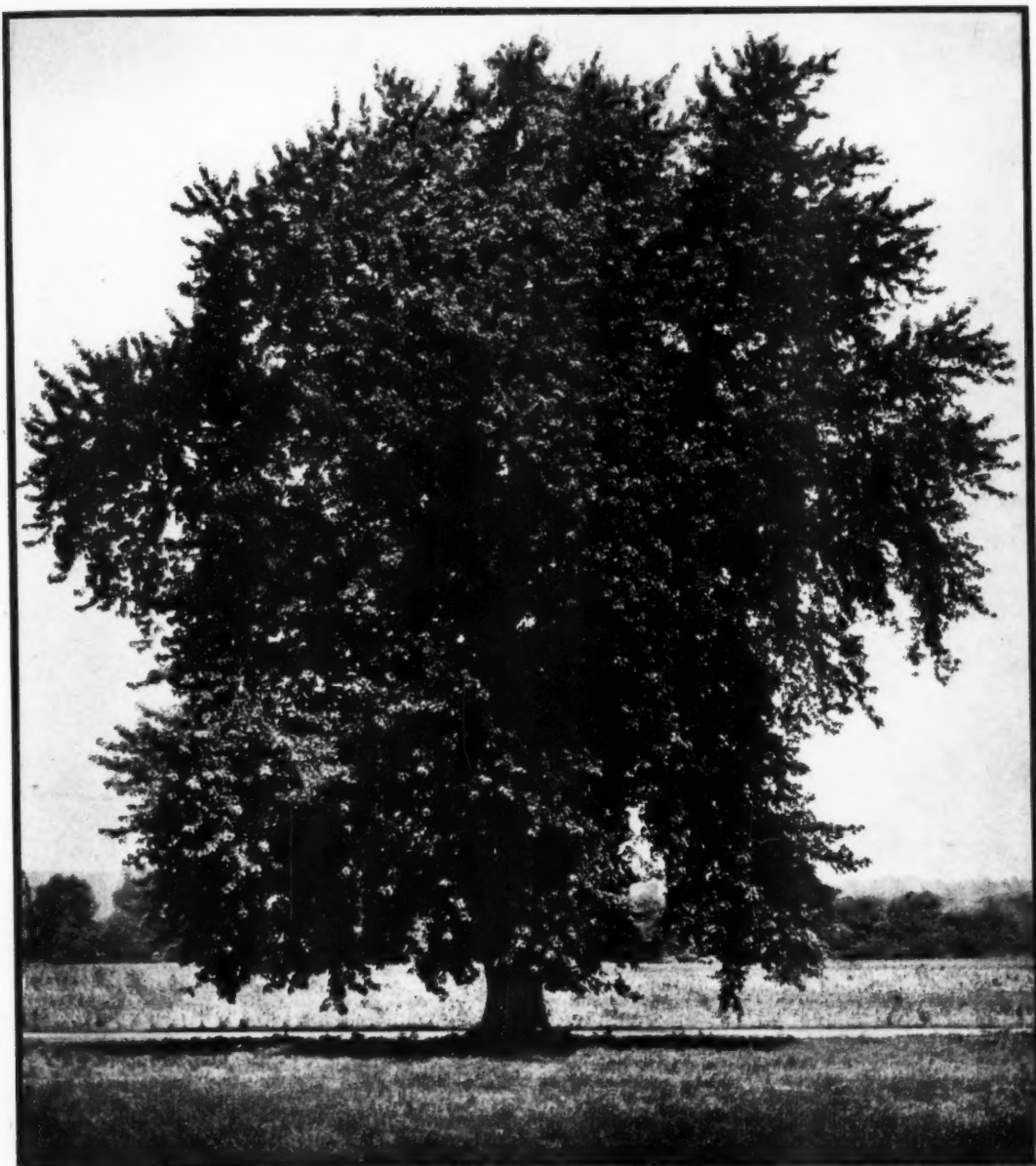
If, instead, my questioner had queried, "When do the leaf-buds pink on the bough?" or, "What time in May did the Canada warbler stop in your tree?" I could have made not only a ready answer but a fully descriptive and lengthy rejoinder as a parent wordily expounds upon a favorite child. But as to an explanation of the biologic embryo I would have remained quiet. As I did.

Here I had lived five epochal years with a maple but was tongue-tied as to its correct scientific lineage. These five years had been as a score or more in my mature development, yet I had overlooked the classification of this friend at my windowpane. Five years of learning a new life pattern, with a tree in attendance as a symbolic companion.

Sunsets and dawns of small associations with this companion which kept my confidences secret within its silvery-sheathed crypt. Poignant memories, many tears, new achievements, excited laughter, all irrevocably bound in a mystic relationship with a tree which shielded me from summer suns and gave reflection during lonely winter moons.

The seasons had come and gone, orderly and in their sequence. The robins brooded their young among the greening buds in spring, the kinglets briefly visiting the yellow leaved boughs in autumn. Five years of loving and waking and breathing and touching a new life intertwined with mine, yet I knew not my love's true name!





Photograph by Devereux Butcher

The tree books and a landscape architect say that my tree is a silver maple. A soft, cut-leaf maple. Not an unusual species, by any means, this "*Acer saccharinum*."

"*Acer saccharinum*," I muse wryly upon the new title as I watch the dancing leaves flirt their bright green ruffles with a soft June rain. I twist the unfamiliar words about a rebellious tongue. They do not come easily. I try again. Enunciating softly, painstakingly. But it's no use. It's like calling a "Butch" the Grand Marquis duc a Blanc. And so I give up. For my tree will always remain expressively, but unscientifically, just plain "Maple" to me.

"*Acer saccharinum*" indeed!

# CAMOUFLAGE PLANNING ..

By ERNEST E. WALKER

IN THESE uncertain days of war, it should not be necessary to stress the importance of camouflage. It is something dear to the heart of every German soldier, and German staff commands have developed the art to a high degree. The Japanese likewise have shown full appreciation of its value. According to observers, airfields in Japan not only are perfectly camouflaged but at some of the more important ones not a single aircraft is visible.

If the Germans and the Japanese feel that such measures should be taken for their protection, surely this country should take action now. There is reason to hope that American authorities, who have yet to appreciate the full possibilities of camouflage, may be induced to encourage its scientific development. Much may depend in the very near future on what is accomplished now in that direction.

In Nature, visual concealment and deception have proved one of the primary means of obtaining the two essentials of life — security and sustenance. As



U. S. Forest Service

In Nature, wildlife has learned well the art of camouflage in order to obtain security and sustenance. Note how these animals blend into their environment

# .. ITS NEED AND PROSPECTS

"It is the Glory of God to Conceal a Thing; but the Honor of Kings to Search Out a Matter." (Proverbs XXV-2)



a result of organic evolution, wild things have come to make full use of relevant optical and psychical principles, and the most extraordinary efficiency and perfection are found in the self-preservation devices adopted. Failure to do so would mean speedy and ruthless elimination.

The analogy between natural and applied protection appears to be sufficiently close to place the subject of camouflage in a somewhat new light — a light which sheds a beam of indirect evidence upon the functional side of animal protection. While man-made contrivances have been invented, natural adaptations have been evolved. Nevertheless, both are intimately related to the pressing needs for survival in this transitory life, whether those needs involve the capture of prey or the capture of markets, the frustration of a predatory animal or of an aggressive power.

The French word "camouflage" was coined to designate the strategic art of obscuring or throwing the one whom it is designed to deceive mentally into dark-



U. S. Signal Corps

In war, man takes a lesson from Nature, utilizing natural cover of trees and other vegetation, supplemented by materials and devices of his own choosing

ness. In other words, to camouflage implies that the observer shall not perceive what is within the orbit of his vision, either because it is rendered invisible or because it is made to appear a part of something else, therefore not distinguishable in true physical character.

In a landscape there is great confusion of the detail of natural objects, as such objects are irregular in shape and complex in outline. Any symmetrical object tends to catch the eye at once. In Nature there are no straight lines except the surface of water; there are no circles, no squares; no sharp contrasts in color and tone of natural objects. Consequently, form no less than color may contribute to the visibility of a thing so that a symmetrical object, or objects symmetrically arranged, such as airplane hangars or buildings arranged in regular order, tend to catch the eye immediately.

In camouflaging proposed structures the position, surrounding topography, shape of the objects to be built, coloring, shadows which the objects will cast, and smoke and light formations must be considered. All obvious markings on ground forms should be avoided. Natural camouflage — trees, shrubbery and grass — and artificial camouflage — correction of silhouettes, smoke screens, etc. — should be used extensively.

In camouflaging structures already in existence the color of the exterior, the planting of trees and shrubbery, changes of the silhouettes and the use of smoke screens, should be taken into consideration. Important buildings should fit into the general scheme of the existing structures and topography; they should blend with the surroundings, and above all they should give the impression of being part of the natural landscape. Nature should be the model, and the earth, rocks, or trees nearby should determine the color of the exterior of the structures.

Shape-destroying by color is designed not so much to harmonize with surroundings as to destroy outlines of building by the use of contrasting and



U. S. Army Signal Corps

The branches and natural, irregular shadow of a tree protect this gun from the aerial observer

irregular coloring. This method of camouflage is valuable only in lone structures such as fortifications, power works, radio stations and reservoirs, and should be used in connection with the other methods of camouflage. For civilian buildings in or near settlements quiet and even colors which match the environment should be used. Important objects in settlements such as public buildings, depots and reservoirs, as well as their surroundings, should have a harmonizing dark coloring.

The growth of plants is another important help in camouflaging by which two problems may be solved. The silhouettes of lone structures can be absorbed or at least broken and a natural green blind can be produced. High growing trees should be planted as close as possible to the object in question because they can cover and break the otherwise easily distinguished outlines and shadows of the structure. Trees and shrubs are most helpful as materials of camouflage when they are planted in masses, or in irregular order. The outline of certain structures, such as high chimneys, radio masts, bridges and aqueducts, can be disrupted by color-destroying blinds if the shadows of the objects are clearly diffused by irregularly planted trees and shrubs.

It would be a waste of time to camouflage isolated structures and not the roads and power lines leading to them. Roads are camouflaged by the use of dark and dust free materials, such as asphalt, tar, colored concrete and oil, and by the planting of trees alongside them. They, along with power and other lines are thus covered by the branches and shadows of the trees. Roads camouflaged in this manner also prevent the aerial observer from taking notice of traffic moving over them, the outlines of the vehicles being absorbed.

Effective camouflage calls for research and study of methods used in Europe and elsewhere during the present war and for creation of new methods. Scientific camouflage should be dear to the heart of



every soldier. Near Saarbrücken are implacements that appear to be inns, farm houses and barns, but actually within their light wooden walls are guns of great caliber. In contrast, other positions are so cleverly concealed that they are not visible except as low copses or shrubbery as little as twenty yards away. The bicycle track from Berlin to Potsdam has been painted green instead of white, and they are using planting materials about Berlin to lessen use of water areas as land marks.

Certain instances of Japanese soldier protection are worthy of note. The little man painted green is so much a part of the tree in which he lashes himself that he cannot be detected fifty feet away—a demonstration of perfect camouflage. Upon approaching all one can see is the tree trunk, leaves and branches. Even from almost directly beneath the tree it looks no different from those around it. The sniper wears a green uniform. His face and hands, even his shoes, are painted green. There are shades and shades of green but the coloring of this man from Nippon matches perfectly the foliage of the big dau tree among the twisting branches of which he has lashed

himself. He is equipped with linesman's climbers to expedite his getting in and out of trees and he is provided with smokeless ammunition for his low-caliber rifle, which makes it impossible to detect his whereabouts by a smoke trail.

Camouflage now embraces large areas, often whole cities and even countrysides. It is well known that every important raid-objective city in warring Europe has particularly planned areas to confuse enemy aircraft. All this camouflage has certain military secret value. It fools everybody part of the time, especially under certain atmospheric conditions, yet it frustrates no military effort all of the time. The main importance of camouflaging great cities, like Berlin and Manchester, is not entirely military but the boost it gives civilian morale. It adds a certain confidence and stimulus to daily life. People are sharing in an exciting game of outwitting the enemy and a certain feeling of security is maintained.

But camouflage alone won't bolster morale, if heavy casualties are suffered. Actual physical cover and protection must be available, especially in congested and highly industrialized (*Continuing on page 239*)



Photo by U. S. Army Signal Corps

Well camouflaged among the trees, soldier concealment here reaches a high point, for the thick woods offer them actual physical cover and protection with the lowest possible visibility



# HOW TO START A YOUNG FOREST

Photographs by Devereux Butcher

Nature provides two seasons of the year especially adapted to field planting of young trees—spring and fall. The spring season begins when frost leaves the ground and ends when new growth begins in earnest. In the fall, planting should be done after summer growth has slowed down and before the ground becomes frozen. But whether you plant in spring or fall, preparations should be made in advance of receipt of trees from the nursery. A good root system is the first essential to successful field planting, and since roots dry out rapidly even though packed in wet moss at the nursery, there must be no delay in getting them into the ground.



If for some reason the young trees cannot be planted the same day they are received, they should be "heeled in". This means digging an open trench with one side slightly slanted and placing the young trees in thin layers against the slanted side. But first wet their roots thoroughly and cut the strings which bind them together in bunches. After they are in the trench, fine soil should be placed against the roots and firmed down with the foot. If left "heeled in" for any length of time, care must be taken to keep the roots moist. The best way to do this is to keep the soil in the trench well saturated with water. But whether "heeled in" or planted the same day the trees are received from the nursery, never let their roots be exposed to drying out by sun or wind even for an hour.



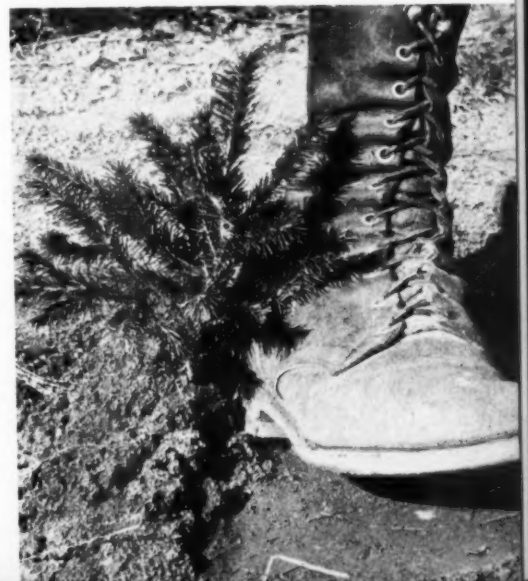
If the young trees are not "heeled in," but are to be planted in the field the same day they are received from the nursery, their roots should be kept damp right up to the time the trees are planted. This can be done by keeping damp moss or mulch around the roots, or by "puddling." The latter operation, however, is not used as much now as in former years. It consists of making a puddle of water and fine soil, then dipping the roots in the puddle. The trees are then placed in buckets or other containers with damp material still guarding their roots as they are carried to the field for planting. Trees that are "heeled in" should be similarly handled when they are removed from their trenches and taken to the field for final planting.

## THE FIELD PLANTING OF YOUNG CONIFEROUS TREES PICTURED STEP BY STEP

There are a number of tree planting tools on the market, but an ordinary mattock will serve the tree planter well. A good stroke will ordinarily make a hole big enough for a two-year-old seedling, but it is vitally important that the hole be large enough to allow the roots to spread out. Since the great bulk of forest planting is done with trees two or three years old — from four to eight inches high — in the case of evergreens, and one year old in the case of hardwoods, the planter must judge for himself or herself the size and depth of the hole required. The important thing is to provide sufficient room for the root system of the seedling.

With the hole properly prepared, and with the roots of the seedling well saturated, the young tree is ready for planting. It should be set in the hole as deep as it grew in the nursery, as shown by the collar mark on its stem. See that the roots are well spread out and then fill in with loose dirt. Do not put sod, leaf litter or other organic materials next to the roots. If needed, use them to fill the upper part of the hole. Don't worry about small stones mixed in the loose soil. As shown in the photograph on the right, the operation is not difficult. Merely hold the tree in position with the left hand and with the mattock fill in with the right. It requires a little practice to get the swing of it, but after the first few plantings it will become a natural operation.

The final step is to pack the dirt firmly around the tree with the heel or toe of the shoe, so that it will stand upright and cannot be easily pulled out. From here on it will shift for itself. If of good stock and properly planted, and if not beset by plague or drought, the young tree should do well. What kind of tree to plant in order to get the best success and at the same time have a valuable forest is often a difficult question. One of the safest rules is to plant trees that are natural to your locality. Or better still, consult with your state forester. He is familiar with local conditions and will be glad to help you.



# WAR COMES AGAIN TO THE RANGE



U. S. Forest Service

UNCLE SAM'S great range lands of the West—the national forests, public domain and Indian reservations, as well as the extensive private ranges—are again enlisted in a war for democracy. As in World War I, they again are furnishing a meat, wool and hide supply for the war front and for the vital lines of war production.

These products—meat, wool and hides—were declared critical early last year and their importance to the winning of the war is increasing daily. Beef consumption per capita increased from sixty-three pounds in 1940 to seventy-one pounds in 1941. An Army and Navy at war strength, along with the tremendous war industry, points to even higher consumption for the duration. At the same time, leasehold requirements of the United Nations must be met.

A billion pounds of apparel wool were used in United States mills during 1941, as compared with a five-year average prior to 1940 of 575,000,000 pounds. Thus the nation's record wool crop of 465,000,000 pounds last year was less than half the amount required. Imports from Australia, New Zealand, South Africa and South America, supplied the rest. It is

obvious, therefore, that even with civilian consumption drastically curtailed, the wool situation will become critical before the year is out unless shipping conditions improve.

How to meet this mounting drain on beef and wool resources, as well as on hides, also heavily taxed to meet war demands, is a problem confronting both stockmen and public range administrators. According to W. R. Chapline, chief of the Division of Range Research, Forest Service, United States Department of Agriculture, stockmen are doing their part. Along with the Forest Service, the Grazing Service and other agencies, they are making every effort to avoid the mistakes of World War I.

During that period, it will be recalled, high meat and wool prices, intensified demand, a liberal loan policy, and the patriotic urge for greater production brought about over expansion without accomplishing the desired increase in essential livestock products. The program fell short because feed supplies failed to match increases in livestock populations. Much of the range depletion and accelerated erosion brought about by World War I is still to be corrected.



Today, according to the Department of Agriculture, there are approximately 33,000,000 cattle in the seventeen western states. This is almost equal to the first World War peak. Sheep exceed 1919 numbers, there being more than 41,000,000 sheep and lambs, with 37,000,000 stock sheep. Improved range and herd management, along with more farm pastures and forage, have made these increases possible.

But the range as a whole is fully stocked. No further increases are desired in livestock population in the West, nor can they adequately be cared for. How, then, will increased demands for range products be met? The answer is still better range management and more intense management of existing livestock. The increased supplies of meat, particularly beef, along with wool and hides, will be met for the duration, it is hoped, by further balancing numbers of livestock with forage and feed supplies, producing more calves and lambs, developing more pounds per animal, and increased marketing.

That these hopes are justified is clearly shown by research and experience, says Mr. Chapline. In the northern Great Plains, conservative grazing and other desirable management have produced a twelve per cent greater calf crop and thirty-five pounds more of calf weight. Wintering a herd of sheep on a conservatively grazed Utah range gave a pound of wool more per animal and a five per cent greater lamb crop.

War production plans of the Department of



U. S. Forest Service

Meat, wool and hides—these are the vital products Uncle Sam's great range lands must contribute to the winning of the war







U. S. Forest Service

For the duration, corrals will be busier places at branding time. Increased marketing to meet war demands for beef will be balanced by producing more calves



Agriculture call for the marketing of 28,000,000 cattle and calves in 1942. In the West, this is an increase of seventeen per cent over 1940; in the six Plains States the marketing increase is approximately forty per cent. This is a double-barrelled effort to furnish needed supplies of meat and hides for the nation's war emergency and at the same time afford a practical means of keeping numbers of livestock in reasonable balance with forage and feed supplies.

Expected marketing of 23,000,000 sheep and lambs during 1942 is slightly above 1941. Wool production goals call for shearing 51,000,000 sheep, or an increase of about five per cent over 1941. Seventy-five per cent of the nation's wool crop is produced in the West.

Stockmen and public range administrators face the challenge the war has brought to the range with confidence and with determination to avoid the mistakes of World War I. Their greatest concern is the weather. Says Mr. Chapline: "With present heavy stocking of range lands, or with an unwise increase in



With wool imports drastically reduced, Uncle Sam's range lands may be severely taxed to supply military requirements unless shipping conditions improve. Above, counting sheep on national forest range.

Below, shearers at work

livestock populations, one dry year with short forage would seriously decrease calf and lamb crops and reduce the growth of animals and wool. Obviously, this would be an extremely serious blow to our war effort and to the future needs of the nation."

Stockmen and public range administrators know they can do nothing to forestall a dry and lean year. Nor can they gamble on having a very favorable year. But given a break in the weather, they know that sound range and herd management is the only way to provide the livestock products needed for the winning of the war, as well as the peace. They know that better animals on full feed under the best care and management will assure maximum production. They know that effective balance between range forage, supplemental feed, and numbers of animals is vital. They know that high prices and ready taking of poor quality animals offer an excellent opportunity to closely cull herds and thereby assure maximum production in meat and wool.

They know that in this manner, and only in this manner, the great western range can contribute its maximum in the present crisis.

To avoid the mistakes of the first World War, stockmen and public range administrators are balancing numbers of livestock with forage and feed supplies. A well managed range (above) will produce much more meat and wool per animal than a depleted, overcrowded range (below)



Photos by Forest Service

Rounding up some of the 28,000,000 cattle needed this year for the war effort. Sound range and livestock management will assure beef and hides for 1943

Grazing Service



# BALSA ... THE BUOYANT

By V. WOLFGANG VON HAGEN

Photographs by the Author

WHEN Francisco Pizarro first skirted the coast of Ecuador, en route to the "Kingdom of Peru," his sailors descried sails in the distance, and Pizarro, thinking that he was to be attacked, cleared the decks for action. When they came up to the craft they found it was not a vessel, but a raft, constructed of a series of large buoyant logs laid side by side and tied with vines. On the raft was a slight deck, a single sail, and a small palm-thatched deck-house. It was a Peruvian sail-raft, the buoyancy of whose wood so impressed the conquerors of the Incas that they gave it the name *Balsa*. And Balsa it has remained to this day.

Every lad who has built model airplanes knows Balsa wood and that because of the availability of this light, strong, tropical wood, his models are infinitely better. This thought impressed me as I rested at Guayaquil between treks into the interior of Ecuador and watched the endless procession of



This youngster of eight carries easily a green balsa log which, though fifteen feet long, weighs only forty pounds



A young balsa stand, straight and slim, without ramifying branches

Balsa rafts that floated down the river bearing fruits and tagua nuts.

Guayaquil on the Pacific Coast is Ecuador's only port and from this inland harbor most of the world's Balsa is shipped. Intrigued by the wood, I frequented the river bank where the 150-foot unwieldy rafts were tied and talked to the natives and studied their crafts. Like the raft that Pizarro first discovered, they were made of forty-foot Balsa logs lashed together with lianas. To the sterns the Indians had attached large rudders some twenty feet in length by which with the help of polers they steered their crude contraptions.

Floating down from the upper Rio Guayas was a matter of some days, but once the rafts reached the tidal waters of the great Guayas River, they were borne swiftly on a four-knot flood tide to the city of Guayaquil. There the Indians sold their fruit, tagua nuts, or other cargo brought down on their rafts. Then they sold the Balsa logs of which the rafts were made.

These negotiations completed, they took passage on one of the small boats that went up the river, to begin again another Balsa raft to be floated down to Guayaquil. So many people are engaged in this practice that when the officials in Ecuador speak about their "floating population" they usually refer to the Balsa cutters.

Learning that an American firm was maintaining a Balsa plantation, I secured the services of their agent in Guayaquil to accompany my wife and me on a visit to Balsa cutters up the Rio Guayas, toward the foothills of the Andes. Thirty-five kilometers from the town of Quevedo on the Rio Camerones, a tribu-



In the forest, balsa is a tall tree, distinguished by its beautifully mottled, grey bark. This one is ready to cut

tary of the great Guayas, this American Balsa Company had laid out a great tract of Balsa wood. Since 1931 it had planted over 150,000 trees. Since the tree grows to a diameter of from sixteen to twenty-four inches in eight years, this plantation constituted the greatest concentration of Balsa wood then growing.

That was just before World War II started when model airplanes and other peacetime uses, such as life preservers, surf boards and insulators were bringing some five or six million feet of Balsa to this country. The demand for the wood for special war uses has

since undoubtedly increased the drain on Ecuador's Balsa supply. And since no conservation methods are generally employed in the country to replant or otherwise perpetuate the Balsa growth, this American company should some day occupy an enviable place in respect to the Balsa market.

With the superintendent of the plantation, we walked through the Balsa groves—plantations that had been hewn from the virgin jungle—and were shown how the seeds are selected and grown in small beds, then transferred later to plantations where they become living evidence of the trees' rapid growth.

Balsa in botanical parlance is of the genus *Ochroma*, embracing a group of tropical bombaceous trees. While the genus is found widely in the tropics, two species in Ecuador are of superior commercial value. "*Ochroma*," which in Greek means paleness, is a light fawn-colored wood—lighter even than cork. Correctly kiln dried, Balsa weighs six to twelve pounds a cubic foot compared to twelve to fifteen pounds for cork. It has a wide range of utility and could be put to more uses. But just as America lost the quinine and rubber industry so it may lose Balsa through lack of conservation in regions of its growth.

In the forest the tree grows largely below 2,000 feet. It is concentrated and grows best in the arenaceous areas of heavy rainfall. It is one of the first trees that appears in a secondary growth. With the *Cecropia* and the light-loving wild Papaya, it forms the dominant second growth in the jungle. Blooming



Easy to fell, balsa is dragged to the river, the bark removed, and it is then chained for rafting



in May and June, the tree produces a characteristic greyish-silky ball of cotton, so soft and of such a fine texture that it should have a place beside Kapok for stuffing. As soon as the forest is cleared the companions of the Balsa—*Cecropias* and *Papayas*—grow beside it, and even outdistance it in growth. To create a Balsa plantation, a forest is leveled, burnt, cleared, and the Balsa seedlings planted. At seven months, the Balsa is a good six feet in height and is distinctive with its large maple-shaped leaves. A technique of Balsa growing is not to thin out the extraneous undergrowth. The fight for existence makes the Balsa reach heavenward for its light, and it does not send out branches. When correctly grown, it yields two

and, unless kiln dried, the wood is apt to split or deteriorate rapidly.

Of greater interest and annoyance are the so-called "macho" (male) trees of the Balsa. The natives refer to the tree as being male, when the Balsa wood (for some unknown reason) turns hard—as hard as any other tree in the forest. Externally, there is nothing to distinguish it from its fellows, the soft pithed or "hembra" (female). The term "male-macho" is a matter of speech; actually the trees are neither male nor female, since the flower of the Balsa is hermaphroditic. In plantation management, the tendency of certain trees to turn "macho" is of concern since the buoyancy of their wood is impaired. The cause has



Lying in the upper Rio Guayas, this raft — made up of balsa and miscellaneous hardwoods, waits its turn to start on the long voyage to Guayaquil

twenty-foot cuttings with scarcely a branch. This technique is important for another reason. If the tree is permitted to send out branches, then it must extend its root system to balance its crown, which appears to harden and increase the weight of its wood.

When mature, Balsa is a tall tree of mottled grey bark, an easy prey to fungoid growths. It will grow to a diameter of two and one-quarter feet in eight years. The tree is easy to fell. Dragged to the river, it is peeled and then chained for rafting. Being somewhat pervious to water, the logs soak a good deal of the river water in their long voyage to Guayaquil

not been determined—a fact that presents an important problem for forest research.

Balsa is a wood with a future. It can replace cork in many respects and thereby make North America less dependent on European cork sources. It has a wide range of other uses, present and potential. It unquestionably is in heavy demand in connection with war uses and is particularly adapted to containers for the shipment of freight by airplane and to use in the making of life preservers, including large rafts and floats for fighting and cargo ships. But will Balsa have the future it deserves? (*Continuing on page 240*)

# EDITORIALS

## FORESTS IN THE SKY

BEFORE this war is won, the skies over key battle-grounds may be dark with forests. This is by way of saying that wood is at the threshold of greatly expanded use in the construction of airplanes for lack of which free peoples from Poland to Java have been crushed under the aggressor's heel.

While no official announcements are being made, increased use of wood in plane construction, it seems clear from talk in Washington and the aeronautical fields, is gaining momentum rapidly. The cry for planes and still more planes apparently is breaking down the brass hat advocates of the so-called perfect, all-metal plane. Many things are contributing to this—the need for increased production, shortages of metal, improved fabrication of wood as a raw material. General MacArthur proved what a few patched up planes could do at a critical time and this has probably had its effect in driving home that ten planes are better than one, even though the ten are not theoretically perfect from an engineering standpoint.

In any event, the trend definitely is towards greater and wider use of wood to speed up plane construction and to black out with numbers the winged fighters of our enemy. Training planes, transportation planes and some bombers already have admitted wood in certain parts. Now, it is understood that wood is being used in the building of glider planes and that a new training plane made largely of plywood is being tested. We shall not be

surprised if within a few months specifications for American fighter planes will admit the use of wood in certain parts.

Just why this country has been so slow in turning to its abundant supply of raw wood for plane construction is due undoubtedly to a military desire to have the best planes it is possible for engineering science to design. This objective is commendable when time permits but when numbers of planes is the deciding factor, the sooner the "perfect principle" is relaxed the faster our plane production will mount and our supremacy of the air expand. Illustration of this is to be found in England, which is importing large quantities of Sitka spruce for plane construction. This wood is distributed among wood-working plants throughout the islands, even down to one-bench shops, and each plant has its assigned parts to fashion out.

A similar allocation of wood to the hundreds of thousands of skilled wood-workers in this country would take advantage of a huge reservoir of labor and now idle equipment and would speed up our plane production program probably by fifty to seventy-five thousand planes a year. England, Russia, Germany and Italy are said to be using wood in plane construction more liberally than this country. We have the wood and we need the planes, so the growing recognition of the part our forests may play in hastening our air supremacy is encouraging.

## SENSE AND NONSENSE

THERE has been a lot of sense and nonsense presented at the prolonged hearings on Senator McKellar's bill to liquidate the Civilian Conservation Corps. On the sense side, one of the most intelligent and realistic statements, in our judgment, was made by Representative John H. Tolan, of California. In view of the fact that the future of the CCC and of emergency funds for the control and prevention of forest fires this summer still hang in the balance, Mr. Tolan's statement ought not to be laid away in the morgue of the committee's hearings as a corpse, we fear, of what might have been. Here are a few pertinent extracts:

"A scant few weeks stand between us and a critical situation in one of our most strategic defense areas," Mr. Tolan declared. "The forest fire season, which is uncomfortably close to California and to

our neighbor States of Oregon and Washington as well, looms as the most menacing in terms of national and state welfare we have ever anticipated. The question, as I see it, is—for once—to make the best use of our time and meet the menace with the strongest force at our disposal.

"It is undoubtedly true that during the past nine years, forestry technicians who have made the study and fighting of forest fires their lifework, have done the best they could with the forces at their disposal. Their greatest source of manpower in these years, fully equipped, mobile, organized, and trained under their guidance, has been the youth of the Civilian Conservation Corps.

"Since that Corps is now in operation, has had the benefit of foremen and supervisors trained in the handling of young men and, in fact, has become the

very core of the fire fighting force in the forests of the State and the entire United States as well, I cannot help but feel that it would be a strategic error of the first magnitude to withdraw them from that service at this critical juncture. \* \* \*

"So far, I have mentioned only two factors in my desire to see CCC forest protection work continued—the need for protection, and the actual presence of the camps at the moment. There is a third. If we are not going to use this untapped reservoir of manpower—untrained youths below draft age—from where are we going to get the manpower to do the forest protection job?

"To draw upon our older population means taking men out of war production—lumbering, manufacturing, farming. College students are not available in sufficient numbers, and besides, they are aiming at more direct participation in the war in most cases. The CCC, as I see it, is the answer—an answer that has been under our noses for nine years. \* \* \*

"When we have an almost providential opportunity of matching big needs with big resources, let us not fumble the chance. On our one hand we have American youth anxious and willing to do their part in the war. We have a place to put them and a job for them to do, and while they do it we can help train

them and improve their physical condition for the time when they must—as all of our young men must—take their places in the armed forces, in war industry, or in war work of some nature.

"What is the greater economy—to take full advantage of this opportunity, this investment in men, machinery and experience, or to waste it in the name of that kind of economy which looks only at money and not what it will buy on the current market?"

On the nonsense side, Senator McKellar himself achieved honorable mention when he pooch-pooched a witness for saying that experience and technique are called for in fighting forest fires. "Anybody," he is quoted as saying, "can fight a forest fire if it gets hot enough, and you don't need technicians to tell them how to do it."

We wish Senator McKellar might have been a witness to the forest fire which threatened Fort Dix, New Jersey, last summer when soldiers took a turn at fire-fighting and had to withdraw in favor of the forest protection "technicians." He would now know that the technicians have just as important a place in fighting forest fires as they have in fighting the Nazis and the Japs, although the techniques are different.

## TREE GARDENS

FEW people appreciate the number of arboretums and botanical gardens in the United States today that are enriching our knowledge of trees and shrubs. Such institutions as the Arnold Arboretum, the New York, Brooklyn and Missouri Botanical Gardens are, of course, widely known, but of the host of lesser arboretums—both public and private—that have come into being unheralded during the last quarter century, the public hears and knows little.

According to a recent survey by the American Association of Nurserymen, there are now upwards of two hundred arboretums large and small in the United States and almost a million and a half acres devoted to their purposes. They dot the broad expanse of our land from the Atlantic to the Pacific, with the largest numbers in Pennsylvania, New York and California. Their independent studies and experiments with trees and other plants must be contributing in a large way to the scientific and educational advancement of improved arboriculture in this country, but as to this there is no national yardstick.

It is to be regretted that at present there is no central agency to coordinate the work and findings of these far-flung centers of tree culture. Logically the National Arboretum in Washington should fill this roll but Congress has been so parsimonious with funds that little more than a beginning has been possible. Probably not one person in a thousand who comes to Washington even knows that in the District of Columbia a large area has been set apart

to form a great national arboretum. And now that the war is on, this institution will do well to hold even its suppressed beginning.

It is interesting to add that Cornell University, the first educational institution in the country to establish a school of forestry, has just recently announced plans for the development of a large arboretum and is seeking to raise necessary funds from its alumni, friends and others interested in the educational services to be derived from arboretums. In addition to providing an outdoor classroom and laboratory for the study of trees and shrubs, the University hopes to acquire and develop an area sufficiently large to experiment in the grouping of plants by landscape units. A third purpose is to make the arboretum serve as a wildlife refuge where animal life in more natural environment also may be studied.

Arboretums are much more than sylvan springs of scientific knowledge. In a broader sense they are tree gardens where the lay public can find physical and mental diversion from the grind of daily tasks. They are indeed—each in its own way—little worlds of interesting and often inspiring plant life and as such are national assets that draw our people closer to the soil. War conditions doubtless will make difficult the maintenance of many of these arboretums but it is to be hoped that they may find ways and means to carry on. They and their good works will be needed desperately when peace comes.

# HOW BRITAIN MEETS AERIAL FIRE BOMBING OF FORESTS

By DENYS VAL BAKER

THERE is no need to stress the importance of forests in wartime. They are as vital a part of a nation's war production machine as factories, transport and administration. It is only logical, therefore, that forests should require as much careful protection as any other defense plant or service.

Unfortunately, perhaps because it is so vast and cumbersome, there may be a tendency to make forest fire protection a somewhat nominal scheme. It was a tendency that held sway over England in the early months of the war until, by bitter experience, it was realized what incredible damage could be caused by enemy airplanes sprinkling a few incendiary bombs over forests and woodlands. In case the same tendency may exist at present in America, I would like to warn against any complacency and to give some advice based on knowledge and experience gained in Britain under wartime conditions.

Firstly, let me explain something about this potential danger from "enemy incendiarism." Fire-bombing has been the most popular method of attack by bombing planes in this war, particularly on behind-the-fighting positions, such as industrial and farming areas. Forests, which may be entirely inflammable, offer the most tempting targets; and I think Americans may be sure that if Japanese bombers begin raiding their shores, as is an obvious probability, they will make forest-firing one of their first tasks.

There are several good reasons: First, the actual destruction of valuable resources; second, the creation of large beacons of light to enable bombers to find their courses more easily and third, the possible stimulation of panic among civilian populations.

Of the actual methods of attack, the most general is for formations of bombers to sweep over forest land and scatter, quite indiscriminately, large quantities of small incendiary bombs. These, falling among trees and bracken, immediately start blazes which can in a very short time mount into veritable walls of fire. Since it is a favorite practice for one wave of bombers to be followed by another, the enormity of the menace to be faced may be understood. It should be mentioned here that German attacks on British woodlands and R.A.F. attacks on the big German forests represented so much potential danger that defenses of both countries, in addition to organizing wide-sweeping ground protections, have even gone to the extent of sending up special airplane patrols to keep watches over forests and woodlands.

Before the war, the isolation of a burning area from adjoining timber, rather than complete suppression of the fire, was the traditional method throughout England, although small fires were smothered wherever possible. Primary consideration was given to holding ground beyond the immediate range of the flames. Equipment was primitive and water seldom used, and fire brigades were summoned only as a last resort. If the fire could not be beaten out with green branches and spades, every available man was called out to dig round the fire area. When the fire had been held, efforts were directed to smothering spark-carrying flames while the burnt-over ground was left to smoulder, sometimes for days—a dull, red-hot mass beneath the blackened top crust, with a deceptive absence of smoke.

But wartime conditions have necessitated a change in these methods of fire-fighting. For instance, it is no longer sufficient to confine a fire to a given area, since every vestige of light must be extinguished before dusk, blackout time. If fires are not extinguished, enemy planes will have an easy means of identification for a return visit the following night. For this and other reasons, such as the obvious advantage of more modern methods, Englishmen have now introduced water control as a system of fighting fires. During the past eighteen months regular and auxiliary fire brigades have often been called out to deal with woodland fires—frequently taking their own water supplies—and they have proved conclusively the value of water control.

Consequently, the British Forestry Commission has issued pumping equipment to all large state forests, and this lead has been followed by most private landowners and lumber operators. A system of establishing water tanks has also been adopted for those areas which are not adequately covered by the existence of ponds, rivers or lakes. In this way, certainly on all the big estates, there is no given area of forest which cannot be supplied with water for fire-fighting. All that is required is the provision of strong enough fire-fighting equipment. Fortunately, British factories have recently been turning out a number of very efficient mobile pumps, and these have been suitable for forest fire-fighting.

An important feature of Britain's plan is the efficient organization of fire patrols, watchers and fire-fighting units *on a permanent basis*. It is absolutely necessary to keep watch day and night. And in the driest months of the summer and autumn, when ground conditions and high (Continuing on page 240)





It's teamwork that counts. Here a twenty-girl unit learns how to use a pine bough "fire swatter"

## CAMP FIRE GIRLS FIGHT FOREST FIRES

Camp Fire Girls at Camp Toccoa, in the Chattahoochee National Forest of Georgia, are going all-out against the great enemy of the woods—fire. Not content with learning and spreading the doctrine of forest fire prevention, they are being trained, under the watchful and experienced eyes of forest rangers, in safe and effective methods of fighting fire.



Next come instructions in the use of the fire rake. "Clear grass and leaf mold down to mineral earth and you have a good fire line," the ranger tells them



Now for the real thing. At the sound of the alarm, the girls rush to their fire-fighting stations

Organized in squads of twenty, the girls are given full instructions on the behavior of a forest fire and the safest, most effective way of extinguishing it. They become familiar with fire-fighting tools and are taught how to use them. When they consider themselves prepared as a unit for a real test, a small fire is set by the ranger, the alarm is flashed, and the Camp Fire Girls fire fighters go into action—even to building fire control lines and mopping up with water pumps. "Put them out while they're little," Camp Toccoa girls, who hail from Atlanta, will tell you, "and you'll never have to fight a big one." And that's sound advice.



Faithful to their training, they attack with vigor and perfect teamwork. Now first-class fire fighters, they are ready to serve when an emergency arises

# YOUR SHADE TREES

## MECHANICAL INJURIES . . . THEIR TREATMENT AND PREVENTION

By P. P. PIRONE

LAYMEN and sometimes even professional arborists are prone to blame invasion by insects and fungi almost exclusively for decay in the trunks and branches of trees. Actually, man or man-made instruments are often the original cause, and the various pests merely follow in to complete the job. The unfortunate aspect of man-made injuries is that their full effects may not become visible for ten or twenty years and consequently little importance is attached to such injuries when they are first made.

The thoughtless boy who swings his baseball bat against a tree or the careless adult who bangs his lawnmower into the trunk seldom realizes that he has just started a vicious circle which in time will lead to a trunk cavity and eventually will shorten the life of the tree. Injury of this sort can be sharply reduced by early education in schools and homes, where children should be taught to regard trees

as friends, and to protect them as they would friends.

Another common source of early damage is the automobile and the truck. Mechanical injuries to trees bordering streets and highways by such vehicles are unavoidable in many instances. Where danger of such injury is constant, considerable protection is afforded young trees, at least, by tree guards. These may be simple, homemade devices consisting of stout stakes driven into the ground six inches from, and on several sides of, the tree as supports for encircling heavy wire, or more elaborate iron ones manufactured especially for this purpose.

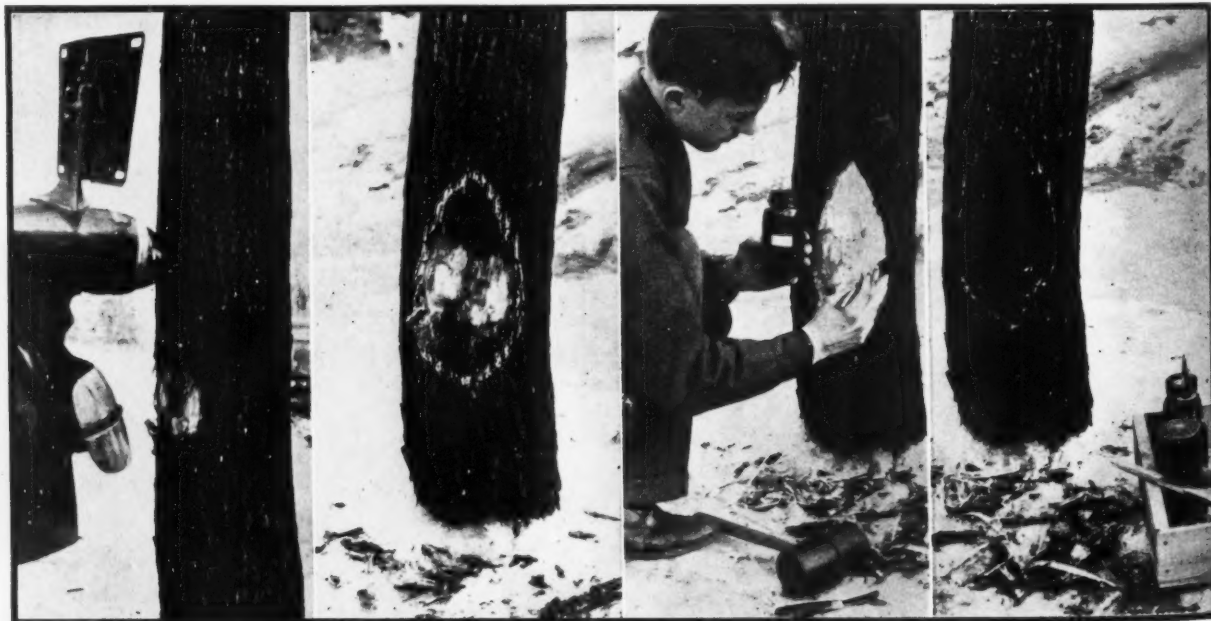
The more severe mechanical injuries are usually confined to the lower part of the trunk. Treatment is simple and inexpensive, and if given soon after the damage occurs, prompt healing and satisfactory results are obtainable. Neglect in protecting exposed sapwood and heart-

wood enables insects and rot-producing fungi to enter. A delay of several weeks or a month may be sufficient for fungi to penetrate so deeply as to preclude their complete removal. Mr. J. F. Collins of the United States Department of Agriculture once wrote that virtually all trunk cavities might have been prevented if the original injury had been properly treated as soon as it occurred.

### Treating Bark Injuries

Recently, in backing out of his driveway, one of my neighbors accidentally hit a Norway maple across the street with the rear bumper of his car. The accompanying illustrations show the damage that resulted and the steps that were taken to repair it.

The damaged tissue was outlined with chalk in the shape of a boat or a long pointed oval extending up and down the trunk. The bark along the chalkline was



Steps in treating bark injury — (1) the accidental injury by the bumper of a car; (2) the wounded area is chalked off in a pointed oval; (3) bark cut away and margin painted with orange shellac, and (4) the exposed wood is thoroughly dressed with tree paint

traced with a sharp knife to insure smooth, clean edges, and the bark within the marked area was then cut away with a chisel and mallet. Orange shellac (not white shellac) was then immediately applied to the cut edges to prevent drying of the inner bark and cambium, and finally the exposed wood was covered with tree paint.

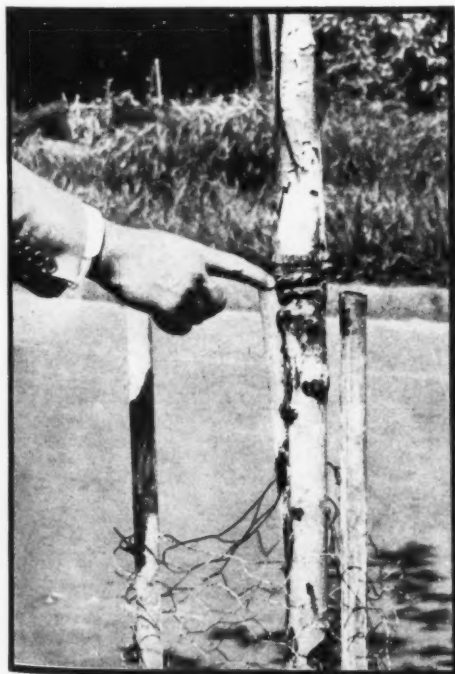
Some may wonder why it is necessary to sacrifice so much uninjured bark above and below the wound. The principal reason is that this bark will die anyway because movement of food in its vicinity will be restricted. When the conducting channels in the bark are cut across abruptly, as in round or slightly oval wounds, the sap does not move laterally with sufficient ease to promote healing or prevent death of unfed tissues. Consequently, by shaping the bark on the sides of the injury as nearly parallel as is practicable to the line of sap flow, which is up and down, and by having the upper and lower ends of the cut depart so gradually that they form a tapering point, maximum nutrient movement and most rapid healing are assured. All irregular wounds should be shaped in this manner.

The cut edges must be shel-

lacked immediately, for if the inner bark and cambium are allowed to dry, they will not heal and eventually will die. For the last step in the treatment, that of covering the exposed wood with tree



Such damage often results from curb installation



The trunk of this young plane has been completely girdled by a wire used to support the tree

paint, ordinary house paints containing oxides of lead and zinc mixed with linseed oil may be substituted if ready-made tree dressings are unavailable. On some trees and during certain seasons, the surface of the wood is too wet to allow proper coverage. A delay of two or three days may be necessary for sufficient drying of the surface to enable proper adherence to the exposed wood.

Regardless of the tree paint used, best results are assured only when the dressed surfaces are inspected periodically and recoated once or twice a year until new tissues, or callus, have completely covered the open surface. This is especially necessary when the tree paint blisters, cracks, or peels. When preparing old wounds for recoating, it is best to clean the surface with a stiff wire brush so as to remove all blisters and flakes. The new callus tissue developing along the edges should not be covered with the paint.

The rapidity of complete healing is governed by the rate of

callus development, the vigor of the tree, and the size of the wound. Sap may drain from the injured area for some time, particularly on elms and maples. Where bleeding is profuse, some reduction is possible by boring a hole into the heartwood a foot or two below the wound with a one-half inch bit and inserting a pipe to drain off the sap. The sap then flows from a new and smaller wound, thus reducing or stopping the flow above and encouraging more rapid healing.

#### Other Mechanical Injuries

Another type of mechanical injury is prevalent along city streets where new curbstones are being installed or old ones repaired. One side of the tree is completely hacked away, in some instances, to permit straight alignment of the curbstone. Our illustration is of a typical example. Immediate damage to such a tree does not appear in the top, but fungus decay undoubtedly will start within a short time.

Careless use of wires and ropes to support trees is also responsible for considerable damage. Unless covered with a piece of garden hose or some similar protective material, wire and rope should never be used for this purpose. As the trunk expands, the bare wire or rope will girdle the trunk or branch it surrounds, and cause weakening or even death of the distal portions. The young London plane in the last illustration was killed by a strangling wire used to support it.

Wires found girdling trees or branches usually should be removed immediately. In some instances, however, especially where the wire has become embedded in the tree and is completely covered by callus tissue, its removal may cause even more damage. In such cases, it is best to sever the wire with a sharp chisel in several places around the trunk and allow the pieces to remain inside the tree. In severing the wire, the blade should be placed parallel with the long axis of the trunk to insure least disturbance of sap movement, and the incisions made in the tree should then be painted with orange shellac.

#### :-: QUERIES :-:

**QUESTION:** Can you tell me whether or not a ginkgo tree will do well in central Indiana?—B. C. E., Indiana.

**ANSWER:** Ginkgo trees grow and thrive in Indiana as they also do in southern Michigan and central New York. In prehistoric times they grew throughout a large part of North America as evidenced by geological remains in pre-glacial deposits.

**QUESTION:** Can you name two long-lived trees for planting as memorials in Panama?—M. E. H., Washington, D. C.

**ANSWER:** The true mahogany, *Swietenia mahagoni* and Spanish cedar, *Cedrela odorata* are suggested for beauty as well as length of life.



# SUPERSTITION IN FIRE PREVENTION

By

LOYD W. ROWLAND and ALLIE BELLE ALLEN

"IT IS BAD LUCK to throw away a match without breaking it in two" was the idea planted in the minds of negroes in a section of Tulsa, Oklahoma, recently to test the influence of superstition on these people and thus give a basis for a new means of fire prevention.

Did the idea spread? Did the negroes believe in superstition strongly enough that they would break the match before throwing it away? They did.

Sixteen non-adjacent blocks in the negro section were selected for the experiment, much time being given to a choice of areas that seemed to have the same socio-economic status. Non-adjacent blocks were chosen so that if a superstition spread within a block it would presumably be due to the planting there and not to the influence of an adjacent block where the idea had also been planted. One resident was used in each of eight blocks, two in each of four blocks. In another block four persons were approached, in another eight, in another sixteen and in still another thirty-two. This made a total of seventy-six persons into whom it was hoped to build the superstition that it is bad luck to throw away a match without breaking it in two.

The woman interviewer carried a tin can which had been converted into a "peep" show by cutting a small rectangular hole in the side. The person interviewed was given a match and invited to light a candle which was inserted in a hole in the bottom of the can. This showed a colored cyclorama of a forest fire — a black charred tree on the left, bright flames and smoke in the center and a green forest at the extreme right. By the light of the candle the person being interviewed read beneath the picture this admonition: "It is bad luck to throw away a match without breaking it in two." Each person interviewed had an opportunity to break his or her match after lighting the candle and before reading the inscription, but not one did so. After looking inside the can, however, seventy-four per cent picked up the match and broke it.

Many of the negroes were quite impressed. Here are samples of comments:

"I sure will think about breaking mine."

"I'll break this one right now."

"I'll break these. I have so much bad luck."

It is undoubtedly true that many could not read the inscription; otherwise they, too, would have broken the matches. In these cases the experimenter did so, saying, "It's bad luck to throw away a match without breaking it in two."

Different attitudes toward the experiment were expressed by some of the persons interviewed. Here are a few remarks:

"The insurance company ought to pay you well."

"Safety measure, is it?"

"That's good. You need somepin' like that to stop so many fires."

"I thank you for the knowledge."

"I'm seventy years old and never heard of it. It's good."

"I wouldn't think about breaking a match if you hadn't showed me that."

"I'll remember that can."

"There ain't no such thing as bad luck, but what you have is all right. I was put in this world to warn others, and I'll sho' tell them about you."

One month after the first interview a second was conducted. This time all adults in the same blocks were interviewed to see, first, the extent to which the practice of breaking matches had been retained by those who had taken part in the first interview, and, second, the extent to which the superstition and the related act of breaking matches had spread to other residents.

This time the work was divided between two interviewers. The original woman interviewer was disguised by having on different clothes, colored glasses, and long gloves, and there was evidence that most of the time she was not recognized. However, as an additional precaution, she returned only to those blocks where few people had previously been interviewed.

In the second experiment the setup was entirely changed. After a friendly greeting the interviewer said: "I have here two well known brands of cigarettes. The paper of one has been colored red and the other blue. I should like for you to light them, and see if you can tell which of the two is stronger. You need not smoke them, just inhale the smoke."

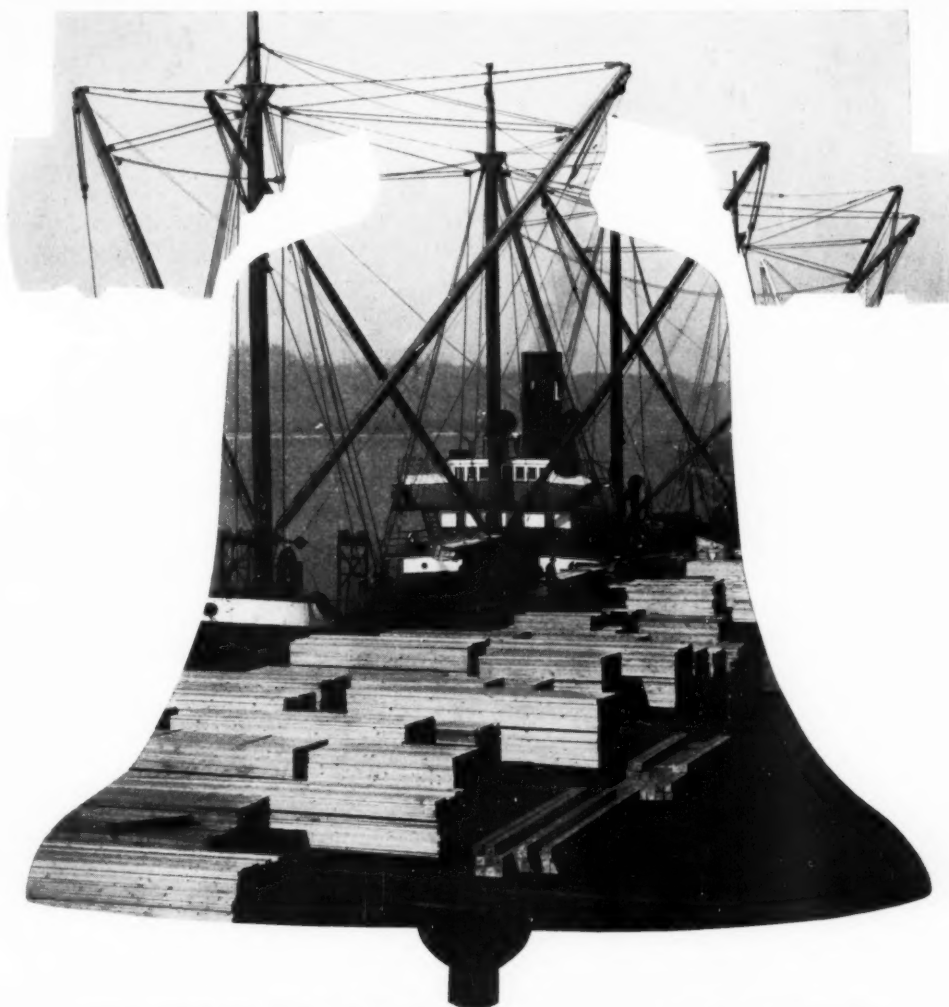
The interviewer watched for the disposal of the match. Of the original persons interviewed now for a second time every one broke his match. When inquiry was made as to why the match was broken typical responses were:

"I break mine. A lady was around about a month ago. She had a sign in a can about breaking matches."

"I breaks mine. A lady done demonstrated to me."

"About a month ago a white lady come by with a little outfit. I forgets it sometimes, but I break my matches."

"Mrs. Smith's children told my husband the white lady said not to throw (Continuing on page 239)



## RINGING THE BELL

Once again Liberty is at stake! Alive to the need, Army engineers undertook the world's largest carpentry job in building camps, cantonments, storage depots, general hospitals, reception and replacement training centers, harbor defenses, airfields, minesweepers, ammunition boxes, battleships, training planes, and other items vital to Victory.

Time was essential. Twenty-four billion board feet of lumber—72 per cent of the total national consumption in 1941—went to war. From coast to coast 300,000 men and women in the woods, mills and offices of the lumber industry united their efforts in harvesting, con-

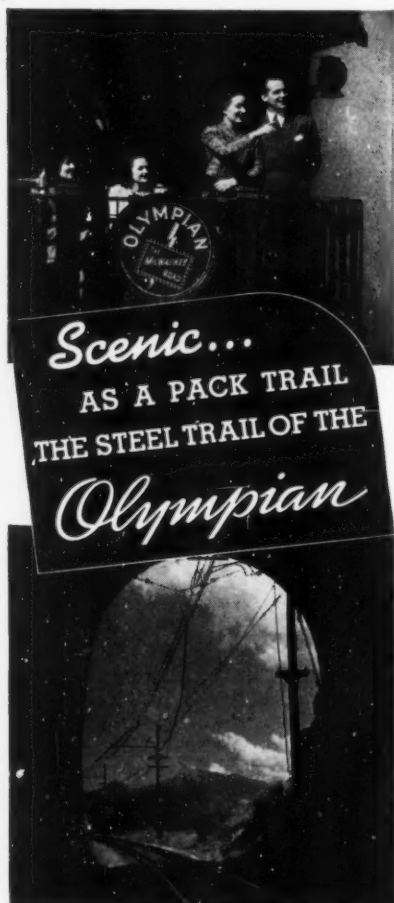
verting and delivering the No. 1 war item . . . Lumber! They whipped time with timber and rang the bell of Liberty.

Lumber needed by the United States was delivered on time, without bottle-necks. Army engineers described the record as "a tribute to the lumber industry's excellence of standards and performance." Future demands will be still heavier, but they will find the industry ready . . . prepared to fight for the free ways of life . . . determined to keep the bells of freedom ringing.



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**The MILWAUKEE ROAD**

## McDUFFIE NEW CHAIRMAN OF REDWOODS LEAGUE

DUNCAN McDUFFIE, of Berkeley, California, civic leader and widely known conservationist, has been unanimously elected chairman of the Board of Directors of the Save-the-Redwoods League. He succeeds the late Joseph D. Grant of San Francisco, who up to his death on February 19 had served as the board's chairman for more than twenty years.

Mr. McDuffie, who in 1929 was awarded the Cornelius Amory Pugsley Medal by the American Scenic and Historic Preservation Society for distinguished service in the field of state parks, has been a director of the Save-the-Redwoods League since 1925. He pioneered in the development of the California State Park System in which the giant redwood forests saved through the League are included. He has also served as chairman

of the California State Park Council, and as president of the Sierra Club.

Paying tribute to Mr. Grant, who for nearly a quarter century led the successful movement to save the giant redwoods, Newton B. Drury, director of the National Park Service, declared: "The nation owes a great debt to Joseph D. Grant. He was a stalwart pioneer in the best tradition of the West. His contribution to the success of the battle to save the redwoods will long keep his memory green."

Through Mr. Grant's devotion to the cause of the redwoods, which has been supported by prominent conservationists throughout the United States, many of the finest groves have been saved, and a program of preservation given momentum that is still carrying on.

## WILDLIFE MANAGEMENT HARD HIT

FUNDS for the Fish and Wildlife Service were drastically cut for the second time as the House on March 30 passed the Interior Department Appropriation Bill. Already reduced \$1,712,140 by the Bureau of the Budget, the House action cut an additional \$1,324,665 from the Service's 1943 appropriation. Unless restored in full or in part by the Senate Committee on Appropriations, the total cut of \$3,036,805 will leave the Service with but \$5,547,110 for the fiscal year beginning July 1. The 1942 appropriation amounted to \$9,583,915.

According to Service officials, some of the actions recommended by the House will completely stop important projects, while others will be seriously affected. Reductions made by the Bureau of the Budget eliminated items such as the purchase of additional lands for wildlife refuges and the construction of buildings and other improvements. Reductions were also made in personnel, and \$500,000 was deleted from the \$2,750,000 fund providing federal aid to the states for wildlife purposes.

Although severe, these reductions would have permitted the Service to retain sufficient personnel to carry on its principal functions without permanent impairment. The House action, however, will seriously curtail or eliminate activities which are vital to an intelligent program of fishery and wildlife management.

The House deleted \$1,000,000 from the federal aid appropriation, \$58,720 from the appropriation entitled "Inquiry Respecting Food Fishes," \$71,550 from an appropriation entitled "Food Habits of Birds and Animals," and \$100,000 from the appropriation entitled "Biological Investigations." The major cuts made by the House come from funds set aside to carry on research into fishery and wildlife

management problems and for the Pittman-Robertson Federal Aid program, a large part of which is devoted to methods of managing upland game animals.

In wildlife research, studies of the food habits of birds and animals will be completely stopped by the House action. The long-time studies in this particular field have served as the foundation for the selection of wildlife areas and the restoration of wildlife habitat on more than 17,500,000 acres of federal refuges, as well as many state-owned units.

The drastic reduction recommended by the House in the appropriation for biological investigations will force the closing of at least a half of the cooperative wildlife management units in a dozen states. This program has been responsible not only for carrying out many individual studies dealing with practical problems of wildlife management, but it has also trained many students in the management of fisheries and wildlife.

The elimination of the trained technical staff as a result of these reductions in appropriations will lead to the abandonment of the Patuxent Wildlife Research Refuge near Washington, D. C.

Severe reduction will mean serious curtailment of an activity more than doubled within recent months to see that streams and waters are not unduly polluted because of increased industrial expansion and the concentration of troops as a result of the nation's preparation for war.

Fishery research, now more vital than ever before because of the demand for fish as food, vitamins and minerals in the wartime diet, will, it is said, be seriously hit by the House action as will studies of fish culture, which contributes to the economical and successful operation of more than 500 state and federal fish hatcheries.

## CCC REPAIR SHOPS TRANSFERRED TO ARMY

PRESIDENT ROOSEVELT by recent executive order has transferred to the Army the repair shops built and maintained by the Civilian Conservation Corps. The system is nationwide in scope, numbering forty-five central automotive repair shops, with capacity to handle more than 40,000 pieces of equipment a year. It was established by the Corps to service and repair current CCC automotive equipment and is said to represent the largest system of its kind in the federal government.

The Army, it is understood, is taking over the shops to use them primarily in training drafted men to become experienced automotive mechanics for the Army. It is expected that some 250 soldiers will be assigned to each shop for training for periods of three months. On this basis the shops would turn out almost 50,000 mechanics a year.

The President's order transferred the administrative personnel of the shops but not the CCC enrollees now assigned to them for work and training. These enrollees, Director McEntee is transferring to CCC camps where specialized work will benefit from their shop training.

## UPSON HEADS LUMBER BRANCH, WPB

ARTHUR T. UPSON, Director of the Southwest Forest Experiment Station and a forester widely known in public and industrial fields of forestry, has been named as new head of the Lumber and Lumber Products Branch of the War Production Board, according to an announcement made by the Board on April 18. Mr. Upson will take up his new duties April 27.

One of his main responsibilities will be to bring about maximum use of existing industrial capacity in the forest products industries for the production of war material and of products for essential civilian use. He will assist the industry in every phase of its production program. In short, his office is the focal point for all War Production Board business relating to lumber and other forest products.

Back of him, Mr. Upson has had a long and wide experience in the forest field, first in national forest administration in the West and later as head of industrial investigations at the U. S. Forest Products Laboratory at Madison, Wisconsin. From this position he became secretary of the Central Committee on Lumber Standards, following which he served as trade extension manager of the National Lumber Manufacturers Association, which position he resigned in 1935 to take charge of the Southwest Forest Experiment Station in Arizona.



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## CONSERVATION IN CONGRESS

ALTHOUGH warned of the critical danger to war progress growing out of forest fires this summer, the conferees of the House and Senate on H.R. 6868, making supplemental appropriations for national defense, agreed on \$5,812,000 as the sum to be made available to meet the forest fire emergency during the next fifteen months. The committee's decision was reached on April 16. Its action represents a reduction of almost \$14,000,000 in the amount approved by the Senate Committee on Appropriations and passed by the Senate on April 7. The larger sum, it is reported, was blocked by House conferees who refused flatly to approve a figure in excess of that recommended by the Bureau of the Budget. As this issue goes to press, however, the two houses have not approved the conference report.

The \$5,812,000 agreed upon will supplement the regular forest fire control funds for state and private lands as provided in the Clarke-McNary Law and for national forests and parks as provided in the departmental appropriation bills. Expenditures on state and private lands must be matched by equal amounts from states and private owners.

### Fire Emergency Funds

On March 7, the Departments of Agriculture and Interior and War submitted to the Bureau of the Budget a \$19,665,000 estimate for the protection of all forest lands—state, private and federal—from fire. Based on a thorough study, this amount is considered necessary to build up a nation-wide forest fire control organization to combat fires in war time resulting from sabotage, enemy incendiary bombing and public carelessness. Of the total amount, \$18,100,000 was estimated for the protection of private, state and national forest lands, and \$1,565,000 for forest lands under jurisdiction of the Department of the Interior.

On March 11, the Bureau of the Budget reduced the estimate to a total of \$5,812,000 and the House Appropriations Committee in reporting H.R. 6868, further reduced the sum to \$2,324,800.

Aroused by the shortsightedness of the House in this respect, conservationists the country over requested Senate Subcommittee on Deficiency Appropriations to restore the original departmental estimates of \$19,665,000. This the subcommittee did and the Senate approved the amount on April 7. However, the subcommittee added a proviso to the \$18,100,000 Department of Agriculture item "That the maintenance, including the pay of enrol-

lees, of any Civilian Conservation Corps camps transferred to the Forest Service either by Congress, or by the President under authority granted by Section 801 of the Second War Powers Act, approved March 27, 1942, shall be payable out of this appropriation." This provision would have made the appropriation ineffective as maintenance of transferred CCC camps would have to be paid out of the sum regardless of whether the camps were actually fighting forest fires.

### Joint Conference Acts

On April 16, the joint conference, consisting of the deficiencies subcommittees of the Senate and the House, arrived at the \$5,812,000 amount and eliminated the CCC maintenance provision.

For emergency forest fire control on Department of the Interior lands, \$812,000 of the total amount will be available. It is understood that of the \$5,000,000 available to the Department of Agriculture, approximately fifty per cent will be used on national forests and fifty per cent on state and private lands on a matching basis.

After passing H.R. 6868 on March 28, the House took an informal spring recess until April 13. The Senate began a similar recess after passing H.R. 6868 on April 7. Pre-recess hearings before the Senate Education and Labor Committee, on Senator McKellar's bill, S. 2295 to abolish the CCC and NYA, brought out much conflicting testimony regarding the war time necessity of these two agencies. Hearings on this measure resumed on April 14 and are likely to continue for another week. General feeling is that the McKellar bill will be killed in committee and the CCC and NYA will continue for the duration on a limited wartime basis.

### Interior Appropriations

On March 27, the House passed H.R. 6845, the Interior Department Appropriation bill, reducing the Budget estimates for forestry and conservation activities by \$1,741,640. These decreases include: Grazing Service cut \$61,325 to \$859,000; Soil and Moisture Conservation Operations cut \$200,000 to \$1,300,000; O. and C. R. vested Grant Lands cut \$1,250 to \$248,750; Bureau of Indian Affairs cut \$13,310 to \$522,580; National Park Service cut \$140,890 to \$5,322,365; and Fish and Wildlife Service cut \$1,324,665 to \$5,547,110. Hearings on the Agricultural Appropriation bill H.R. 6709, are progressing in the Agriculture Subcommittee of the Senate Appropriations Committee.



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## CONSERVATION CALENDAR

Important Bills in Congress with  
Action March 13-April 18, 1942

### BILL ENACTED

S. 2208—VAN NUYS—Second War Powers Bill, to further expedite the prosecution of the war. Passed Senate January 28, 1942. Passed House February 28, 1942. Signed by the President March 27, 1942. Public Law No. 507.

### APPROPRIATIONS

H. R. 6709 — TARVER — Department of Agriculture Appropriation bill for the fiscal year ending June 30, 1943. Passed House March 13, 1942. Referred to the Senate Committee on Appropriations March 16, 1942.

H. R. 6845 — JOHNSON, Oklahoma — Department of the Interior Appropriation bill for the fiscal year ending June 30, 1943. Passed House March 30, 1942. Referred to the Senate Committee on Appropriations March 30, 1942.

H. R. 6868—CANNON, Missouri—Making additional appropriations for the national defense for the fiscal year ending June 30, 1942. Passed House March 28, 1942. Amended and passed by the Senate April 7, 1942. Conference report (No. 2030) submitted in the House April 18, 1942.

### CONSERVATION

S. 2378 — O'MAHONEY — To promote the development and production of minerals belonging to the United States, to authorize the construction and operation of electrical facilities, to promote utilization of the natural resources of the nation, and for other purposes. Introduced March 17, 1942. Referred to the Committee on Public Lands and Surveys.

### PUBLIC DOMAIN

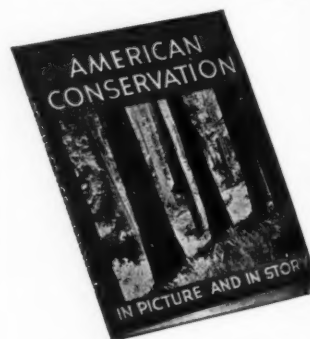
H. R. 5860—ROBINSON, Utah—To declare certain lands to be part of the public domain and to provide for the administration thereof. Passed House March 16, 1942. Referred to the Senate Committee on Indian Affairs March 17, 1942.

### WATER AND STREAM CONTROL

S. 2390—McFARLAND—To facilitate the construction of water conservation and utilization projects under the Interior Department Appropriation Act, 1940, approved May 10, 1939 (53 Stat. 685). Introduced March 20, 1942. Referred to the Committee on Irrigation and Reclamation.

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## NEW BOOKS and



## OTHER PUBLICATIONS

A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

**NATURAL HISTORY OF THE BIRDS OF EASTERN AND CENTRAL NORTH AMERICA**, by Edward Howe Forbush and John Richard May. Published by Houghton Mifflin Company, Boston. Illustrated. 651 pages. Price \$4.95.

This book is based upon three volumes entitled "Birds of Massachusetts and Other New England States," by Edward Howe Forbush, who, for many years, was connected with the American Ornithologists' Union. At the time of his death, the third volume remained unfinished, and it became the task of John Richard May, formerly a member of the staff of Mr. Forbush, to complete the manuscript. In 1935 Mr. May was granted authority by the Massachusetts legislature to edit and prepare a one-volume abridgment of the original works, and to broaden their scope to include the birds of North America east of the ninety-fifth meridian. This fine book is the result of Mr. May's efforts. Far from being a mere medium for the identification of species, it offers excellent reading and is filled with thrilling and vivid first-hand accounts of the habits of birds. Ninety-seven in all, the illustrations are color plates made from the paintings of Fierres, Brooks and Peterson.

**JUNGLE IN THE CLOUDS**, by Victor Wolfgang von Hagen. Published by Duell, Sloan and Pearce, New York. 260 pages. Illustrated. Price \$3.00.

The spirited story of the quest of a naturalist in the great rain-jungles of Honduras for the Quetzal bird of Indian legend. Deified for centuries by Mayas and Aztecs, this fabulous bird has never survived transfer from its habitat. On behalf of the Bronx Zoo of New York, the author undertook to break the tradition of centuries and to secure the bird alive.

How he accomplished this is only part of the story related here. He tells of fascinating tropical animals and insects; of a tribe of "extinct" Jicaque Indians as anthropologically significant as they were personally baffling; of explorations in the magnificent Maya ruins at Copan. An enlightening book, well worth reading.

**GUIDE TO GEORGIA TREES**, by Wilbur H. Duncan. Published by the University of Georgia Press, Athens. 63 pages. Price, 50 cents.

This complete guide to the trees of Georgia has been arranged with a systematic key to the groups which makes identification easy for the layman. A map of the state of Georgia, marked off in six physiographic provinces, offers further simplification. The booklet should be useful to tree-lovers and to those working with trees not only in Georgia, but to a considerable extent to those in neighboring states.

**AMERICAN WATER BIRDS**, Also Hawks, Owls and Game Birds, by Maitland A. Edey. Published by Random House, New York. Illustrated. 72 pages. Price, \$1.00.

After Maitland A. Edey's book, "American Songbirds," was published, there became an increasing demand for a like volume covering aquatic, predatory and game

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birds. This book by Mr. Edey has been written in answer to that demand. Identical to its predecessor in format and number of pages, it is also very simply written, and every species described in the text is pictured in full color by reproductions of the unexcelled bird portraits of Luis Agassiz Fuertes. The book will prove to be invaluable to both youthful and the adult beginners in the interesting field of ornithology.

## PAPER AND THE WAR

(Continued from page 205)

of wood to the mills, the shortage of chemicals and the difficulty in obtaining metals for repairs and replacements as well as new machinery.

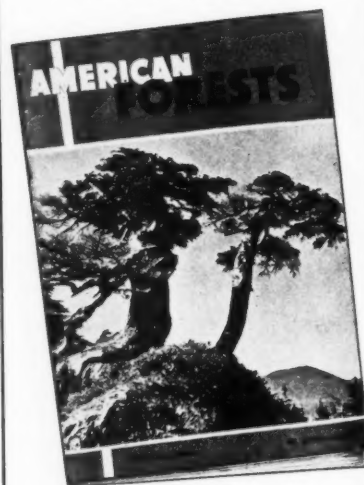
The optimistic approach, on the other hand, would take the position that we can, if we will, to a considerable extent if not entirely, overcome the expected shortage. How? First and most important by exerting greater efforts in salvaging waste paper as a substitute for new pulp. Although waste paper is now being salvaged at the rate of about five million tons a year, it is distinctly possible for this amount to be greatly increased if the man in the street, the housewife, and industry and business will cooperate.

According to the British Press Service, the English people have been surprised to learn that a ton of waste paper can be used to produce 47,000 boxes for small arms ammunition, 3,000 boxes for aero-cannon shells, 1,000 packing cases for two-pounder shells, or 1,500 shell containers.

Industry can and is cooperating with the government by simplifying and standardizing the production of paper, particularly in the wrapping and printing paper items. Shifts can be made in the type of pulp ordinarily used for certain types of paper. For example, although the process is costlier and the paper not as strong, mixed groundwood and sulphite pulp can be used to make wrapping paper stock—a product ordinarily made almost exclusively from kraft—thus releasing kraft pulp for the manufacture of heavy bags—where strength is essential.

We can economize on the amount of paper used domestically and commercially, particularly in the amount for wrapping packages and by re-using containers. But above all we can salvage more paper—newspapers, magazines, wrapping paper, and paper boxes and cartons. Save paper and turn it in to the organization that is authorized to make such collections in your locality. Personally, I would like to feel that the container in which is shipped one of the bombs that helps to make a Pearl Harbor out of Tokio had been made from a magazine that I read a few days ago.

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## WILDLIFE IS TAKING IT

(Continued from page 200)

Navy aircraft over the Indian-Banana river area in Florida, a recent census indicates an increase in waterfowl population. However, this population is made up chiefly of seaup, which are much less subject to disturbance than other species."

In approximately the same area, J. V. Kelsey, game management agent, observes: "Many planes practice landings on the St. John River where there are thousands of wild ducks. As the planes come in or take off the birds simply move. Nor do they fly far. Birds a reasonable distance from the planes are hardly disturbed."

From the Salton Sea Refuge in California, refuge manager Luther C. Goldman observes that "during air maneuvers, planes fly over fields where geese are feeding. Snow geese will flush every time, but Canada geese are not easily disturbed. They merely become alert."

The consensus of opinion of other observers in the Fish and Wildlife Service is that geese of all kinds are almost invariably excited and disturbed by airplane flights overhead.

The air above another water area, also in California, is filled with training planes day and night, reports A. W. Elder, game management agent. "Directly under these planes, I have personally observed an estimated 300,000 ducks resting. The birds apparently were not bothered."

Up in Cheney, Washington, refuge manager John D. Connors reports that "planes fly over the refuge daily, at from 2,500 to 5,000 feet. These in no way affect the waterfowl."

But in Georgia, associate biologist Edwin P. Creaser found a different situation in the Ogeechee River area. He reports: "During maneuvers planes work in formation close to the ground. This has resulted in frightening the ducks over the entire Ogeechee River area. The number of waterfowl is one-tenth that of former years, and persons residing, working, or hunting in the area attribute the decrease to the maneuvers."

So much for waterfowl. But what about quail? Reports Clarence D. Flint, refuge foreman at Marianna, Florida: "Have not noticed any difference in the quail (bobwhite) habits. They do not seem to mind if the air is full of planes."

What about big game? Are they disturbed by aircraft? "We have observed mountain sheep feeding and resting when blasts were set off (presumably by bombing—Editor) not far away," reports G. E. Wardwell, refuge manager at Las Vegas, Nevada. "Also, sheep have been seen feeding unconcerned when planes are flying overhead."

From R. E. Bateman, district agent at Billings, Montana: "At the state game

preserve, which includes an airport area, I have noticed planes taking off and flying low over a bunch of antelope. The animals were frightened, but after moving on a few hundred yards they started feeding again."

There is a story current that deer are actually increasing on the Fort Bragg Military Reservation in North Carolina. This has not been confirmed, but John Finley, district agent, and W. H. Ransom, game management agent, both of Seattle, Washington, make these interesting observations:

"Soldiers at Fort Lewis," reports Mr. Finley, "have informed me there is a big deer population on the reservation. The animals can be observed any day, even on the artillery and rifle ranges. They apparently leave when firing begins, but return."

Writes Mr. Ransom: "Captain George Pearson at Fort Lewis told me that on his horseback rides around the reservation he commonly encounters deer, often not distant from the area where heavy artillery regularly practices. He stated that the reservation deer population paid not the slightest heed to the cannon explosions, that they apparently had learned such noises meant no harm to them."

Nor do the big guns of the Navy, it would appear, cause much disturbance among shore birds. Game management agent Frank S. Boonhower of Seattle, writes that while he was in the Dungeness district of Washington "three destroyers, engaged in heavy cannon practice, passed. As far as we could observe, waterfowl

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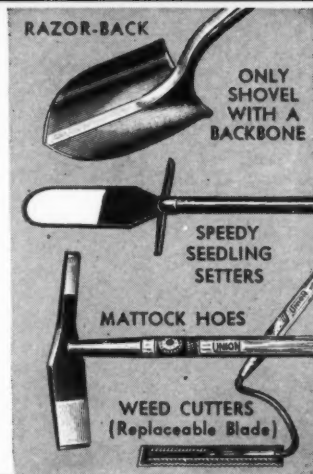


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were not disturbed."

Damage to refuge areas and to wildlife by bombing practice appears to be negative. The great Cabeza Prieta and Desert game ranges in the Southwest are bombing practice areas, but few live bombs are used. Off the keys of southern Florida, however, the business is real and deadly. What happens there? Reports William C. Lehmann, patrolman: "There are as many ducks in the area as at the same time last season. Fishing has never been better. It is my opinion that as long as bombing is five miles off shore, no harm will result to any wildlife."

As mentioned previously, some refuge men point to certain beneficial effects of military operations in and around refuge areas. W. Grand McFarland, Jr., refuge manager at Ilwaco, Washington, expresses the opinion that "poaching is now much less frequent around the Willapa Bay region due to the present rigid patrol of the Army guard."

The same situation is reported by Hugh M. Worcester, game agent at Berkeley, California. "All small boats other than coast guard have not been allowed to operate in the bay and inland waters," he writes. "This prevented some hunters from reaching certain areas and afforded protection to migratory waterfowl during the balance of the hunting season."

P. G. Carnes, superintendent at Orangeburg, South Carolina, thinks in terms of fish. He reports that "before establishment of the airport we suffered a considerable loss of fish each year due to the depredations of osprey, herons and other fish-eating birds. In some cases it was necessary to destroy some of the birds in order to protect fish, particularly during the spawning season. Increased activities at the airport are evidently causing this class of birds to seek other feeding places."

Can wildlife take it? It would definitely seem so. Take it, perhaps, because of an amazing adaptability to conditions, better than most human beings. If Uncle Sam, who came through with a 10,000,000-acre sanctuary when wildlife needed it most, is in want of a million acres in his bitter struggle for survival, it seems only reasonable to concede them to him.

The Fish and Wildlife Service isn't alarmed. Nor are the men whose job it is to manage the refuge areas, as their observations have clearly shown. They know, for one thing, that areas of high wildlife values have been spared. They know, too, that between the War Department and the Fish and Wildlife Service there exists mutual confidence, a workable plan of cooperation. On occasion refuge areas desired by the Army were abandoned when objections were raised by the wildlife administrators. On the other hand, the wildlife people have constantly held in mind the single purpose of the nation today—the winning of the war.

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## Selected Reading References on Conservation



A COMPREHENSIVE list of reading references forms an appendix to the book — AMERICAN CONSERVATION — In Picture and In Story.

This list has been reprinted as a separate of twelve pages, to meet the many calls for reference material. Copies may be obtained for 10c in coin or stamps.

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## SUPERSTITION IN FIRE PREVENTION

(Continued from page 228)

a match away without breaking it. He breaks his matches."

From those who recognized her came this type of comment:

"You are the lady who had the matches about a month ago. I remembers to break mine."

"Every time I strike a match I'll think about you."

During the second interview every adult in each block was interviewed to see if the superstition had spread. This meant that with the cigarette test 261 additional persons had to be interviewed. Of this number, twenty-eight had heard of the superstition. Exactly half, or fourteen, had formed the practice of breaking their matches. How many persons outside the block had been told about the practice is not known. But the idea spread. Persons were interviewed in blocks adjacent to experimental areas where sixteen adults had first been interviewed. Seven had heard of the practice and three broke their matches.

It may well be that mere geographical proximity is not of as great importance as other factors such as kinship, church membership, or play groups. The spread of the idea may have been even more general than our sampling indicated.

It is interesting to note, in view of these experiments, that in the southern part of the United States nine out of every ten fires are started by man. It is of importance also to note that the population of

the southern states is twenty-nine per cent negro. In some states the percentage is much greater. One characteristic that negroes have, admittedly, is belief in superstitions. And this trait is probably only slightly, if any, smaller in the white groups that approach them economically and culturally.

Superstitions are compulsive. They cause people to do things or not to do them. They cause action or restraint of action. Hence, the question: Can the superstitions of these people be utilized in any way to modify their behavior so that they would be more careful about fires, and, to limit the problem, could they through superstition be influenced to be more careful in the disposal of matches?

Caldwell and Lundeen in a book called "Do You Believe It?" find that the most prevalent superstition relates to luck. People say, "It's bad luck to do this; it's good luck to do that." So, why not "It's bad luck to throw away a match without breaking it in two?"

As a result of the experiment, certain conclusions can be drawn. First, in a person-to-person relationship where the interviewer has prestige, a superstition can be linked to a fire prevention measure in such a way that over a one-month period it is 100 per cent effective. Second, there remains only the question of the ethics of spreading superstitious ideas, and that problem the experimenters leave to the philosophers.

## CAMOUFLAGE PLANNING

(Continued from page 211)

areas. Here modern methods of city planning, also modern housing programs pushed during recent years especially in socially minded countries, notably Sweden and Finland, must be recognized as giving still another morale advantage. The recent development of better housing and living conditions in this country will be of very great advantage from the standpoint of public morale with the impact of war.

The extension of camouflage treatment to industrial plants has greatly expanded the scope of the work. Consideration is now being given to this phase of protection in connection with the design, location, and landscape plans for new construction. Appraising the importance of progress of industrial camouflage is not an easy task, however. There seems no doubt that camouflage will continue to advance along all lines during the coming years. In the course of time many techniques devised by man will be improved but the basic principles — concealment, confusion, and dispersion — will remain the same.

Camouflage technique is no mystery but based on logic and common sense. Certain principles may be learned from the printed page, the drafting room, laboratory, or studio but it takes much practice and experience through the handling of large areas of land, water and forests as well as the arrangement of buildings, to do an effective and practical job. The competent



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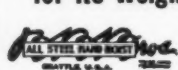
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camouflage planner will take full advantage of what natural cover there is of trees, of contour of land, and if necessary supplement these by using artificial materials blended into the surroundings.

But it should be kept in mind that camouflage does not imply absolute concealment. Complete hiding is fine enough but if that is impossible even the lessening of visibility to confuse and delay recognition of an object is something to be regarded with satisfaction.

Starting as an art, camouflage planning is today turning scientific for it is concerned more and more with an elaboration of technique which requires scientific training and broad scale planning. It must conceal or obscure huge objects in buildings, facilities and roads — from air-

craft which must find those objects generally at considerable distance and at great height.

This is a moment for decisions of importance and force of circumstances may accelerate haste unwisely as was the case which hurried the English into some illogical camouflage developments, the results of which proved both expensive and impracticable. Camouflage is naturally a fertile field for exploitation of fantastic and visionary enthusiasts. In the process of streamlining the situation of camouflaging planning within an orbit of practicality, it is necessary to remember that camouflage seeks to protect objects from hostile observation and so from hostile weapons of warfare.

## BALSA—THE BUOYANT

(Continued from page 220)

I doubt it. Before the war ninety per cent of the world's Balsa came from Ecuadorian forests and the wood was getting very scarce. The native cuts the wood close to the water's edge. He does not replant. In many sections, it is not worthwhile for him to go into the interior to bring out Balsa, miles from the river. Fortunately it does not take long to grow, but without understanding that the tree must seed in order to replant itself, Ecuador's Balsa will disappear, as will other sources which may be opened up.

As it is now with Balsa, so was it with rubber and quinine. Instead of bleeding the rubber trees they were cut down to secure the sap. The crude latex was filled with stones and lesser other products, with the result that rubber manufacturers

could not depend on Hispanic American exploitation of wild rubber resources. To insure a steady supply and a standard product, the rubber tree was taken to India, Sumatra, and Africa.

Quinine is another example. The tree instead of being peeled on one side, was felled or entirely stripped and allowed to die. Hence, the quinine market fluctuated between scarcity and superfluity. Only three thousand feet above where I was standing in the Balsa trees, Mr. Richard Spruce, in 1860, gathered the seeds and saplings of the Casacarolla roja (quinine), and had them sent to India to start the quinine industry. If I may be allowed the reflection, foreigners alone do not rob Iberia America of her riches; the destruction is of her own making.

## BRITISH FORESTS BOMBED

(Continued from page 223)

winds favor serious outbreaks, local helpers are called in to augment watchers. Another reason for having a full time force is that it is essential that forest workers give their whole attention to their ordinary duties, in view of the crying need of timber for war production.

The work of the fire patrols is varied. Generally they concentrate attention on those sections of forests intersected by rights-of-ways or public footpaths. In forests of more than a thousand acres, however, fire towers have been erected. These are connected by telephone with foresters' houses, with the estate fire-fighting unit, and, if possible, with cottages occupied by leading members of the emergency fire personnel. Fire towers are staffed night and day during danger periods on a system of four-hour shifts during the day and an eight-hour shift at night. Each tower has a defined zone for surveillance corresponding to a map show-

ing the forest sections. This system enables clarity in reporting incidents to headquarters. Ground patrols are equipped with knapsack sprayers, while they are aware of recognized points on the patrol routes at which they can obtain spades, axes and birch besoms useful in beating out ground fires.

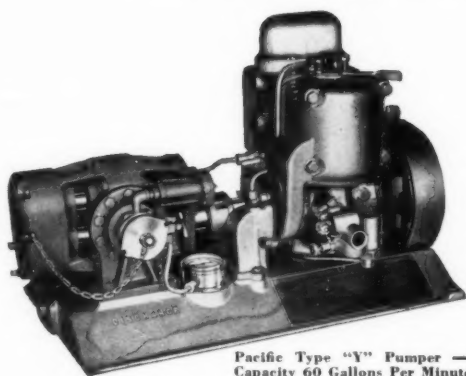
The object of these intense patrolling schemes is to avoid the danger of fires catching too big a hold before there is time to bring out the water equipment. The patrollers are the preliminary "shock troops," so to speak. But it is water that is the best fire-fighter. Today all large estates have at least one pumping outfit, either a trailer pump or a self-contained lorry unit, mounting pump and water tank; and if the warning system is efficient it should be possible for the lorry unit to reach the scene of operations in a few minutes and get the blaze under control.

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